

CONNEXIONS

MATHEMATICS

III

Mathematics Grade 3

By:
Siyavula Uploaders

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Chapter 1

Term 1

1.1 To complete a bar graph¹

1.1.1 MATHEMATICS

1.1.2 Meet Bonny and Tommy

1.1.3 EDUCATOR SECTION

1.1.4 Memorandum

The educator must help the learners to obtain the information on their birthdays in class so that they can complete the bar graph.

Let the learners raise their hands to show in which month their birthdays are. Count how many learners have birthdays in that month. The learners write this information in the circle above each month.

for example: three children have their birthdays in January. The 3 is written in the circle above Jan.

This can be a class activity.

It is also a good opportunity to learn the names of the months in the correct sequence. It is not required of them to write the names of the months at this stage.

Give the learners enough time to discuss their findings, make deductions and draw conclusions after they have completed the bar graph.

1.1.5 LEARNER SECTION

1.1.6 Content

1.1.6.1 ACTIVITY: To complete a bar graph [LO 5.4, LO 5.5]

Bonny and Tommy are 8 years old and their birthday is on 13 May.

Then they will be _____ years old.

- They want to know when your birthdays are. Do you know when your birthday is?
- Now you must help me! (Do you know the names of the months?)
- Put up your hand if I mention the name of the month in which your birthday falls. I will count how many friends have a birthday in each month.
- Write this number in the circle above the name of the month.

¹This content is available online at <<http://cnx.org/content/m22690/1.1/>>.

Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.

Table 1.1

- Now we can complete the birthday graph.

Make an X to represent each friend in the month in which his or her birthday falls.

1. In which month(s) do most of the friends have their birthdays?

2. In which month(s) do the fewest of the friends have their birthdays?

3. What in the graph can change?

4. Why can it change?

5. What cannot change?

Draw a birthday cake with candles on. I want to see how old you are.

LO 5.4	LO 5.5	
--------	--------	--

Table 1.2

1.1.7 Assessment

Learning Outcome 5:The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

Assessment Standard 5.4: We know this when the learner reads, interprets and reports on information in own and a peer’s representations of data;

Assessment Standard 5.5: We know this when the learner reads and interprets data presented in simple tables and lists.

1.2 Number path²

1.2.1 MATHEMATICS

1.2.2 Meet Bonny and Tommy

1.2.3 EDUCATOR SECTION

1.2.4 Memorandum

1.2.5 LEARNER SECTION

1.2.6 Content

1.2.6.1 ACTIVITY: Number path [LO 1.1, LO 1.6, LO 1.3, LO 1.4, LO 1.10]

- Here is the number path that Bonny and Tommy walk to school. Follow the path and fill in the missing numbers.

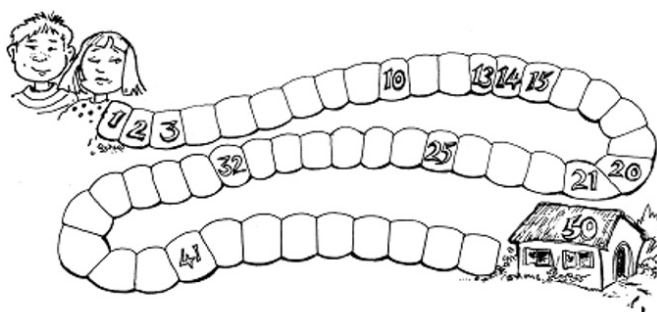


Figure 1.1

- Bonny and Tommy have brought money to buy sweets. Let's count the money in their purses.



Figure 1.2

²This content is available online at <<http://cnx.org/content/m22691/1.1/>>.

Bonny has _____ c.

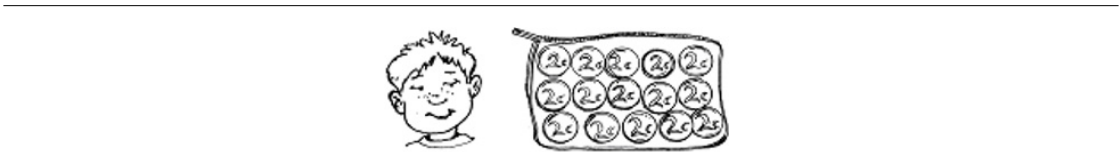


Figure 1.3

Tommy has _____ c.
_____ has more money than _____
She has _____ c more than he has.

- Bonny buys sweets for 20c. Now she has _____ c left.
- Tommy buys sweets for 10c. Now he has _____ c left.
- They pool their money. Now they have _____ c altogether.
- How many ten-cent pieces do they have? _____
- Draw them. (A circle with 10c written in it is good enough!)

LO 1.1	LO 1.6
--------	--------

Table 1.3

- Think!

Make Bonny's numbers:		Make Tommy's numbers:	
1 more	2 more	1 less	2 less
$8 + 1 = \dots\dots\dots$	$3 + 2 = \dots\dots\dots$	$7 - 1 = \dots\dots\dots$	$6 - 2 = \dots\dots\dots$
$6 + 1 = \dots\dots\dots$	$7 + 2 = \dots\dots\dots$	$9 - 1 = \dots\dots\dots$	$8 - 2 = \dots\dots\dots$
$2 + 1 = \dots\dots\dots$	$1 + 2 = \dots\dots\dots$	$5 - 1 = \dots\dots\dots$	$4 - 2 = \dots\dots\dots$
$4 + 1 = \dots\dots\dots$	$5 + 2 = \dots\dots\dots$	$6 - 1 = \dots\dots\dots$	$9 - 2 = \dots\dots\dots$
$7 + 1 = \dots\dots\dots$	$4 + 2 = \dots\dots\dots$	$3 - 1 = \dots\dots\dots$	$5 - 2 = \dots\dots\dots$
$3 + 1 = \dots\dots\dots$	$2 + 2 = \dots\dots\dots$	$8 - 1 = \dots\dots\dots$	$3 - 2 = \dots\dots\dots$
$5 + 1 = \dots\dots\dots$	$6 + 2 = \dots\dots\dots$	$4 - 1 = \dots\dots\dots$	$7 - 2 = \dots\dots\dots$

Figure 1.4

- Mom gives Bonny and Tommy 4 carrots each. Draw the carrots for each one in their lunch boxes and complete the number sentences.



Figure 1.5

- Number sentences:

$4 + 4 =$	2 fours are	$2 \times 4 =$
$3 + 3 =$	2 threes are	$2 \times 3 =$
$5 + 5 =$	2 fives are	$2 \times 5 =$
$2 + 2 =$	2 two's are	$2 \times 2 =$
$10 + 10 =$	2 tens are	$2 \times 10 =$
$20 + 20 =$	2 twenties are	$2 \times 20 =$

Figure 1.6

- Puzzle!

Bonny says: All directions = 9 Tommy says: All directions = 12

2		3		4		5
4	3				4	
		4				

Table 1.4

LO 1.1		LO 1.10	
--------	--	---------	--

Table 1.5

1	_____	3	_____	_____	_____	_____	_____	_____	10
_____	12	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	27	_____	_____	30
31	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	44	_____	_____	_____	_____	_____	50

Table 1.6

- Find Bonny’s numbers and fill them in on the number block.

seven; nineteen; twenty two; thirty five;
forty nine; fourteen; thirty three;
sixteen; forty one; twenty eight

- Tommy’s numbers have been filled in on the number block. Help him to write down the number and the number name, e.g. 1: one.

3 : _____
 :
_____ : _____
 :
_____ : _____
10 : _____
 :
_____ : _____
 :
_____ : _____
 :
_____ : _____

- Bonny must sort the numbers from the least to the most and write them down:

5; 40; 18; 36; 29; 45; 33

- Tommy must sort his from the most to the least and write them down.

46; 26; 13; 24; 1 1; 43 34

LO 1.3		LO 1.4	
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Table 1.7

- Tommy is hiding from Bonny. Help her to find him. Add 3 and follow the number path.

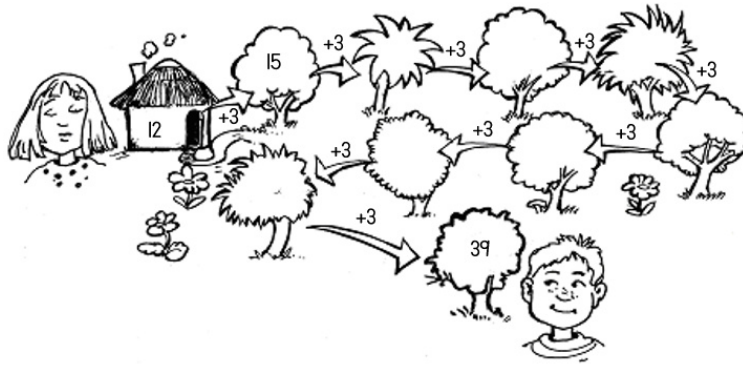


Figure 1.7

Hurrah! Here is Tommy!

- Now help Bonny to find her way back home.

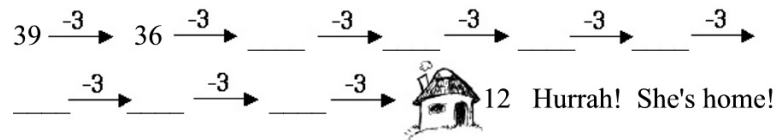


Figure 1.8

Bonny and Tommy are working on the computer. They are entering these numbers.

- Complete:

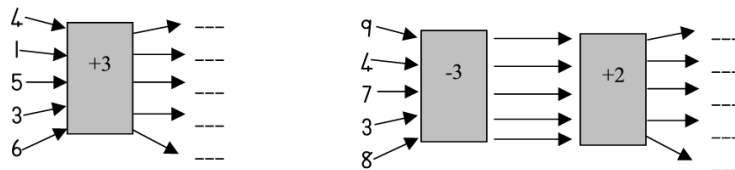


Figure 1.9

- There are 5 tricycles in the store. How many wheels do you see?
- _____ wheels. Draw the wheels for every tricycle.

LO 1.1	
--------	--

Table 1.8

1.2.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:

1.1.1 the intervals specified in grade 2 with increased number ranges;

Assessment Standard 1.2: We know this when the learner reads and interprets data presented in simple tables and lists.

Assessment Standard 1.3: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;

Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10 uses the following techniques:

1.10.1 building up and breaking down numbers;

1.10.2 doubling and halving;

1.10.3 number-lines;

1.10.4 rounding off in tens.

1.3 Number sentence³

1.3.1 MATHEMATICS

1.3.2 Meet Bonny and Tommy

1.3.3 EDUCATOR SECTION

1.3.4 Memorandum

p. 1: When you begin with operations, make the learners aware that the four operations (addition, multiplication, subtraction and division) involve only two different processes:

Two processes Together Separate

This includes concepts like: Add together Join Altogether Take away Separate Hand out/Divide

Four signs + x _ ,

different groups equal groups different groups equal groups

Look at schematic representations

+12 + 14 = 35 -26 - 12 = 14

x5 x 3 = 15 ,30 , 3 = 10

The more the learners see this representation, and hear the explanation, the better they will understand and be able to apply it when solving problems.

The learners must understand the commutative property of addition

(3 + 4 = 7 and 4 + 3 = 7) and multiplication (2 x 5 = 10 and 5 x 2 = 10), but they need not know or use the words “commutative property”.

³This content is available online at <<http://cnx.org/content/m22695/1.1/>>.

p. 2: The learners must understand the associative property of subtraction

($9 - 4 = 5$ and $9 - 5 = 4$) and division ($10 \div 2 = 5$ and $10 \div 5 = 2$).

p. 3: Learners must first experience with concrete objects how the answers to the subtraction operations can be checked: return what you have taken away and if you have the number you began with, you know your answer is correct. Later this can then be done in writing.

Encourage them to check regularly and later they will do it automatically.

1.3.5 LEARNER SECTION

1.3.6 Content

1.3.6.1 ACTIVITY: Number sentence [LO 1.9]

- Bonny has read 3 books and Tommy has read 4 books. Together they have read 7 books.

Number sentence: $3 + 4 = 7$

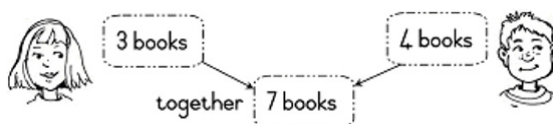


Figure 1.10

Let's have Bonny and Tommy change places:

Number sentence: $4 + 3 = 7$

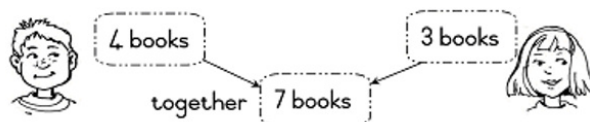


Figure 1.11

- The numbers on either side of the $+$ sign can change places without the answer changing!

$6 + 3 = 9$ $8 + 1 = \underline{\hspace{2cm}}$ $2 + 5 = \underline{\hspace{2cm}}$ $1 + 6 = \underline{\hspace{2cm}}$ $5 + 4 = \underline{\hspace{2cm}}$ $3 + 5 = \underline{\hspace{2cm}}$ $2 + 3 = \underline{\hspace{2cm}}$ $4 + 2 = \underline{\hspace{2cm}}$	Change them:	$3 + 6 = 9$ $1 + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
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Figure 1.12

-
- Do the same with:

$10 + 4 = 4 + 10 = 14$ $10 + 1 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $10 + 9 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $10 + 5 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $10 + 3 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $10 + 8 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $10 + 2 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$	$20 + 5 = 5 + 20 = 25$ $20 + 9 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $20 + 1 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $20 + 6 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $20 + 4 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $20 + 2 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ $20 + 7 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
--	--

Figure 1.13

LO 1.9	
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Table 1.9

- Mom gives Bonny and Tommy 9 apples. Bonny takes 4 apples. There are 5 apples left for Tommy.

Number sentence: $9 - 4 = 5$

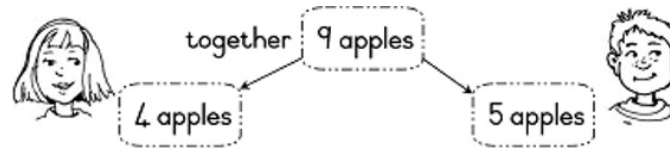


Figure 1.14

-
- Now let's give Tommy's apples first:

Number sentence: $9 - 5 = 4$

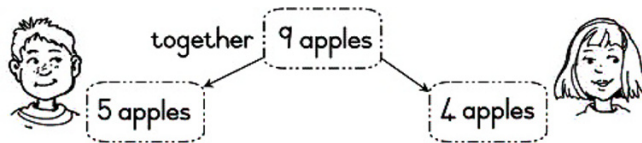


Figure 1.15

The numbers on either side of the $=$ sign can change places.

Watch $9 - 4 = 5$

carefully! $9 - 5 = 4$ Now do the same with:

$9 - 3 = 6$	Change them:	$9 - 6 = 3$
$8 - 2 = \underline{\quad}$		$8 - 6 = \underline{\quad}$
$3 - 1 = \underline{\quad}$		$3 - \underline{\quad} = \underline{\quad}$
$6 - 4 = \underline{\quad}$		$6 - \underline{\quad} = \underline{\quad}$
$7 - 5 = \underline{\quad}$		$7 - \underline{\quad} = \underline{\quad}$
$4 - 2 = \underline{\quad}$		$4 - \underline{\quad} = \underline{\quad}$
$8 - 6 = \underline{\quad}$		$8 - \underline{\quad} = \underline{\quad}$
$5 - 3 = \underline{\quad}$		$5 - \underline{\quad} = \underline{\quad}$
$9 - 2 = \underline{\quad}$		$9 - \underline{\quad} = \underline{\quad}$

Figure 1.16

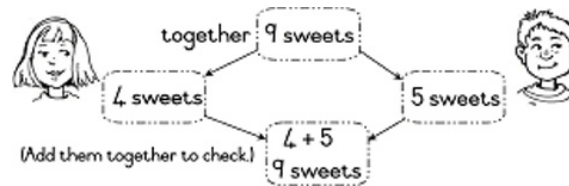
-
- Tommy cannot remember how much money he had in his purse this morning. He knows that he bought fruit for R5 and he now has R3 left. Help him. How much did he have this morning?

LO 1.9	
--------	--

Table 1.10

- Bonny and Tommy want to know if their subtraction number sentences are correct. We can help them to check their sums.

Number sentence: $9 - 4 = 5$

**Figure 1.17**

Check! Put everything you took away and everything that was left, together again. If you have the same number that you started with, your calculation is correct.

- Now do the sums and check your answer every time:

5 - 1 = 4	Check: 1 + 4 = 5
7 - 2 = ____	2 + ____ = ____
6 - 1 = ____	1 + ____ = ____
5 - 3 = ____	3 + ____ = ____
8 - 5 = ____	5 + ____ = ____
9 - 2 = ____	____ + ____ = ____
4 - 1 = ____	____ + ____ = ____
7 - 4 = ____	____ + ____ = ____
8 - 6 = ____	____ + ____ = ____
6 - 4 = ____	____ + ____ = ____
<hr/>	
16 - 2 = ____	2 + ____ = 16
19 - 3 = ____	3 + ____ = 19
14 - 4 = ____	4 + ____ = 14
18 - 5 = ____	5 + ____ = 18
17 - 3 = ____	3 + ____ = ____
15 - 4 = ____	____ + ____ = ____
13 - 2 = ____	____ + ____ = ____
11 - 1 = ____	____ + ____ = ____

Figure 1.18

1.3.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.9: We know this when the learner performs mental calculations involving:

1.9.1 addition and subtraction for numbers to at least 50;

1.9.2 multiplication of whole numbers with solutions to at least 50.

1.4 Even and uneven numbers⁴

1.4.1 MATHEMATICS

1.4.2 Meet Bonny and Tommy

1.4.3 EDUCATOR SECTION

1.4.4 Memorandum

Up to Grade 2 the learners used the word “ones” for “units” but as from Grade 3 we change to “units”. Explain it to the learners.

Use concrete objects and help the learners to discover for themselves what even and uneven numbers are. Do this to 9 at first.

Help them to discover the pattern from 11 to 19.

When they have discovered the pattern of 2 4 6 8 0 on the unit side for even numbers and 1 3 5 7 9 on the unit side for uneven numbers, they have fun applying this to higher numbers.

1.4.5 LEARNER SECTION

1.4.6 Content

1.4.6.1 ACTIVITY: Even and uneven numbers [LO 1.4, LO 2.2, LO 1.9, LO 1.8]

- Complete the pattern with numbers:

1	2	3	4	5	6	7	8	9	10
11	12								

Figure 1.19

All the SQUARES belong to Bonny. She has all the numbers with a 2 0 on the side of the ones (units). All her numbers are therefore even numbers.

All the CIRCLES belong to Tommy. He has all the numbers with a 1 on the side of the ones (units). All his numbers are therefore uneven numbers.

- Sort Bonny’s and Tommy’s numbers:

⁴This content is available online at <<http://cnx.org/content/m22700/1.1/>>.

23 38 14 9 56 80 75 2 61 97

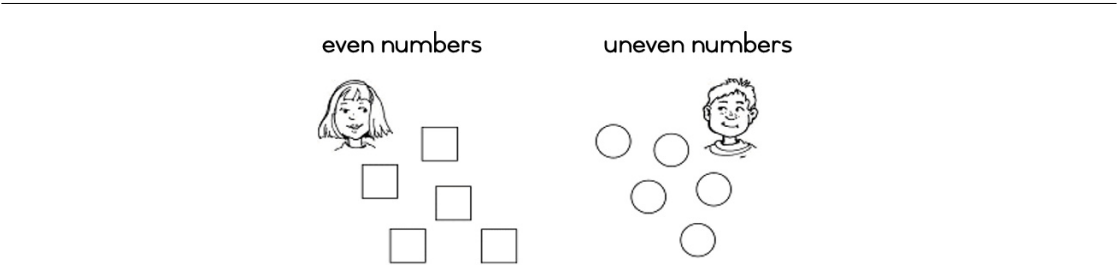


Figure 1.20

LO 1.4	LO 2.2
--------	--------

Table 1.11

- Think!

5 + 3 = ____	8 + 1 = ____	9 - 2 = ____	9 - 4 = ____
1 + 6 = ____	2 + 5 = ____	5 - 3 = ____	6 - 2 = ____
7 + 2 = ____	6 + 2 = ____	8 - 4 = ____	7 - 3 = ____
4 + 4 = ____	1 + 5 = ____	7 - 1 = ____	8 - 7 = ____
3 + 6 = ____	3 + 4 = ____	4 - 3 = ____	9 - 3 = ____

Figure 1.21

LO 1.9

Table 1.12

- Match the right words: equal to; greater than; less than.

7	is equal to	$3 + 4$
8	is	$1 + 8$
$2 + 7$	is	7
$6 + 3$	is	$3 + 6$
$4 + 4$	is	$5 + 4$
12	is	$10 + 2$
$40 + 1$	is	14

Figure 1.22

-
- We can replace the words with signs:
-

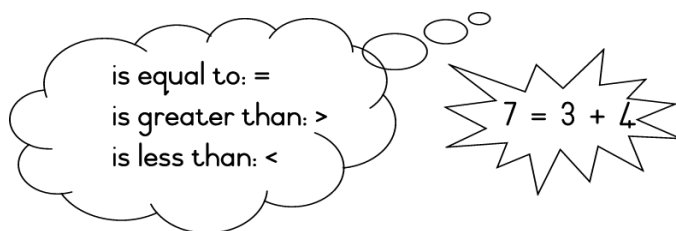


Figure 1.23

8	_____	$1 + 8$	$40 + 1$	_____	14
$2 + 7$	_____	7	$20 + 7$	_____	$20 - 7$
$6 + 3$	_____	$3 + 6$	$4 + 10$	_____	$10 + 6$
$4 + 4$	_____	$5 + 4$	$10 + 9$	_____	$14 + 5$
12	_____	$10 + 2$	$5 + 5$	_____	$9 + 1$

Figure 1.24

Table 1.13

1.4.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.4: We know this when the learner orders, describes and compares the following numbers:

1.4.1 whole numbers to at least 3-digit numbers;

1.4.2 common fractions including halves, quarters and thirds;

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems involving:

1.8.1 addition and subtraction of whole numbers with at least 3 digits;

1.8.2 multiplication of at least whole 2-digit by 1-digit numbers;

1.8.3 division of at least whole 2-digit by 1-digit numbers;

1.8.4 estimation;

Assessment Standard 1.9: We know this when the learner performs mental calculations involving:

1.9.1 addition and subtraction for numbers to at least 50;

1.9.2 multiplication of whole numbers with solutions to at least 50.

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.2: We know this when the learner copies and extends simple number sequences to at least 1 000.

1.5 Numbers⁵

1.5.1 MATHEMATICS

1.5.2 Meet Bonny and Tommy

1.5.3 EDUCATOR SECTION

1.5.4 Memorandum

Learners must know the words “horizontal” and “vertical” and know what they mean.

Make sure that the learners understand the role of the nought (0) as a placeholder in numbers without units, like 10, 20, 30, 40 etc. This is particularly important for vertical operations.

⁵This content is available online at <<http://cnx.org/content/m22709/1.1/>>.

1.5.5 LEANER SECTION

1.5.6 Content

1.5.6.1 ACTIVITY: Numbers [LO 1.10, LO 1.8, LO 2.2, LO 1.6]

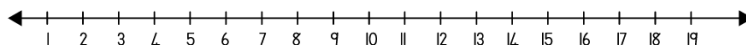


Figure 1.25

-
- Use the number line and fill in 3 places after:

5 : _____	1 : _____	6 : _____	2 : _____
15 : _____	11 : _____	16 : _____	12 : _____
25 : _____	21 : _____	26 : _____	22 : _____
35 : _____	31 : _____	36 : _____	32 : _____
45 : _____	41 : _____	46 : _____	42 : _____

Figure 1.26

-
- Fill in 2 places before:

4 : _____	7 : _____	3 : _____	8 : _____
14 : _____	17 : _____	13 : _____	18 : _____
24 : _____	27 : _____	23 : _____	28 : _____
34 : _____	37 : _____	33 : _____	38 : _____
44 : _____	47 : _____	43 : _____	48 : _____

Figure 1.27

Table 1.14

- Compare the numbers with each other:

6	is 2 more than	4
16	is _____ than	14
<hr/>		
3	is _____ than	6
13	is _____ than	16
<hr/>		
7	is _____ than	3
17	is _____ than	13
27	is _____ than	23
<hr/>		
___	is 2 more than	5
___	is 2 less than	8
___	is 1 more than	9
___	is 3 less than	14

Figure 1.28

-
- Bonny and Tommy want to write their sums in a different way.

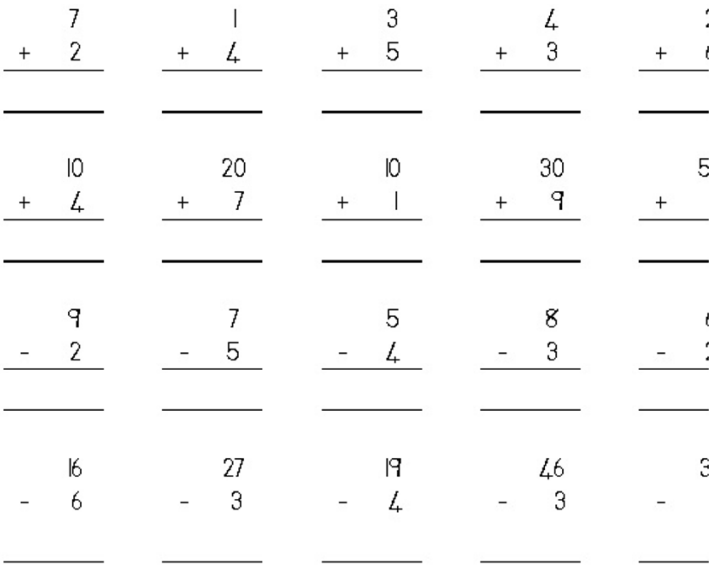


Figure 1.29

LO 1.8	
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Table 1.15

Complete the patterns:
Do the same with:

Do the same with:		
$4 + 2 = 6$	$5 + 4 = \underline{\hspace{1cm}}$	$3 + 4 = \underline{\hspace{1cm}}$
$14 + 2 = 16$	$15 + 4 = \underline{\hspace{1cm}}$	$\underline{\hspace{1cm}}$
$24 + 2 = \underline{\hspace{1cm}}$	$25 + 4 = \underline{\hspace{1cm}}$	$\underline{\hspace{1cm}}$
$34 + 2 = \underline{\hspace{1cm}}$	$35 + 4 = \underline{\hspace{1cm}}$	$\underline{\hspace{1cm}}$
$44 + 2 = \underline{\hspace{1cm}}$	$45 + 4 = \underline{\hspace{1cm}}$	$\underline{\hspace{1cm}}$
$8 - 3 = 5$	$5 - 4 = \underline{\hspace{1cm}}$	$9 - 2 = \underline{\hspace{1cm}}$
$18 - 3 = 15$	$15 - 4 = \underline{\hspace{1cm}}$	$\underline{\hspace{1cm}}$
$28 - 3 = \underline{\hspace{1cm}}$	$25 - 4 = \underline{\hspace{1cm}}$	$\underline{\hspace{1cm}}$
$38 - 3 = \underline{\hspace{1cm}}$	$35 - 4 = \underline{\hspace{1cm}}$	$\underline{\hspace{1cm}}$
$48 - 3 = \underline{\hspace{1cm}}$	$45 - 4 = \underline{\hspace{1cm}}$	$\underline{\hspace{1cm}}$

Figure 1.30

LO 2.2	
--------	--

Table 1.16

- Bonny says: it is much easier to work with numbers if you separate the tens and the units.

She renames the numbers, e.g. $36 = 30 + 6$

- Tommy says: sometimes you have to group the numbers differently after you have separated them.

He then regroups the numbers, e.g. $30 + 6 = 20 + 10 + 6$

Rename Regroup

$34 = 30 + 4 = 20 + 10 + 4$

$28 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}} + 10 + 8$

$46 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}} + 10 + 6$

$39 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$

$23 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$

$55 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$

- Put the tens and units back together again:

$30 + 10 + 1 = 40 + 1 = 41$

$20 + 10 + 7 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

$10 + 10 + 2 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

$40 + 10 + 9 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

$30 + 10 + 6 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

$20 + 10 + 5 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

LO 1.10	
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Table 1.17

- Bonny and Tommy go to the store. Bonny has R5 and Tommy has R6. On the shelf there are cookies and chocolates that they want to buy.



Figure 1.31



Figure 1.32

- How many cookies can Bonny buy for her R5?

_____ cookies. Draw them.

- How many chocolates can Tommy buy for his R6?

_____ chocolates. Draw them.

LO 1.6	
--------	--

Table 1.18

1.5.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems involving:

- 1.8.1 addition and subtraction of whole numbers with at least 3 digits;
- 1.8.2 multiplication of at least whole 2-digit by 1-digit numbers;
- 1.8.3 division of at least whole 2-digit by 1-digit numbers;

- estimation;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

- 1.10.1 building up and breaking down numbers;
- 1.10.2 doubling and halving;
- 1.10.3 number-lines;
- 1.10.4 rounding off in tens.

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.2: We know this when the learner copies and extends simple number sequences to at least 1 000.

1.6 Halving and doubling⁶

1.6.1 MATHEMATICS

1.6.2 Meet Bonny and Tommy

1.6.3 EDUCATOR SECTION

1.6.4 Memorandum

If you as educator do not want to do halving just after doubling, leave it for the moment and do it later. However, make very sure that the slower learners in particular understand and have mastered the process of doubling before you do halving. Only do halving of even numbers at first.

It is important for the learners to know that $10 \div 2$ can have 2 different meanings: division or grouping.

Look at the following two problems:

Divide 10 apples between 2 children so that they receive the same amount.

$10 : 2 = 5$ Each receives 5 apples.

I have 10 apples and give 2 to each child. How many children were there?

$10 : 2 = 5$ There were 5 children.

The number sentence is the same, but the presentation differs.

1.6.5 LEARNER SECTION

1.6.6 Content

1.6.6.1 ACTIVITY: Halving and doubling [LO 1.10, LO 1.9, LO 1.8, LO 1.7]

- In tens: Yesterday Bonny had 5 sums correct. Today she doubled that number. Now she has _____ correct.

Double means: Add just as many.

You must add the same number twice (2x).


Double 5: _____ (Think like this: $5 + 5$) That is 2×5 .

- Now Tommy wants to double all his numbers. Help him! I want to see the way you think!


⁶This content is available online at <<http://cnx.org/content/m22710/1.1/>>.

4 : _____	4 + 4	2 : _____	5 : _____
40 : _____		20 : _____	50 : _____
<hr/>			
10 : _____		30 : _____	15 : _____
12 : _____		34 : _____	25 : _____

Figure 1.33

$4 + 4$ is: 


2 groups of 4 $2 \times 4 = 8$

$2 + 2 + 2 + 2$ is: 

4 groups of 2 $4 \times 2 = 8$

Figure 1.34

- Numbers on either side of the \times sign can change places, as with the $+$ sign. The answer stays the same.



2 groups of 6 are equal to 6 groups of 2

2×6 = $6 \times 2 = 12$

Figure 1.35

- I see 2 children. How many fingers do they have altogether?

There are 2 groups of 10.

Number sentence: $2 \times 10 =$ _____

Table 1.19

- How quickly can you do this?

$2 \times 4 = 8$	Change them: $4 \times 2 = 8$
$2 \times 10 = \underline{\hspace{2cm}}$	$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$
$2 \times 3 = \underline{\hspace{2cm}}$	$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$
$2 \times 8 = \underline{\hspace{2cm}}$	$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$
$2 \times 2 = \underline{\hspace{2cm}}$	$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$
$2 \times 5 = \underline{\hspace{2cm}}$	$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$
$2 \times 1 = \underline{\hspace{2cm}}$	$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$
$2 \times 6 = \underline{\hspace{2cm}}$	$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$
$2 \times 9 = \underline{\hspace{2cm}}$	$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$
$2 \times 7 = \underline{\hspace{2cm}}$	$\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

Table 1.20

LO 1.9	
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Table 1.21

- Bonny sees 5 bicycles. How many wheels are there?

Think like this: $2 + 2 + 2 + 2 + 2$

Number sentence: $5 \times 2 = \underline{\hspace{2cm}}$ or $2 \times 5 = \underline{\hspace{2cm}}$

There are $\underline{\hspace{2cm}}$ wheels.

- Tommy sees 8 bicycles. How many wheels are there?

Number sentence: $8 \times 2 = \underline{\hspace{2cm}}$ or $\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} =$

There are $\underline{\hspace{2cm}}$ wheels.

- Bonny has 20 two-cent pieces. How much money does she have?

Number sentence: $20 \times 2 = \underline{\hspace{2cm}}$ or $\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

She has $\underline{\hspace{2cm}}$ c in her purse. Draw the money.

LO 1.8	
--------	--

Table 1.22

- Mom gives Bonny 10 cookies and tells her to give half of them to Tommy.



Figure 1.36

Half of 10 is 5.

We halved the number 10.

Halving means: divide into two equal parts.

- Halve:

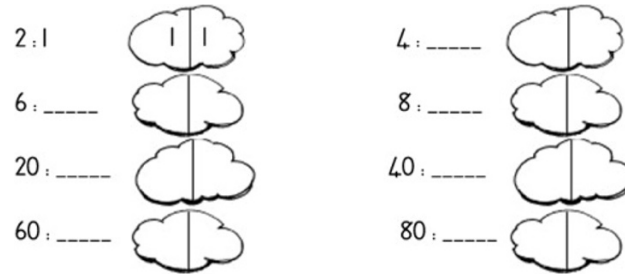


Figure 1.37

Use the sums above to help you!!



Figure 1.38

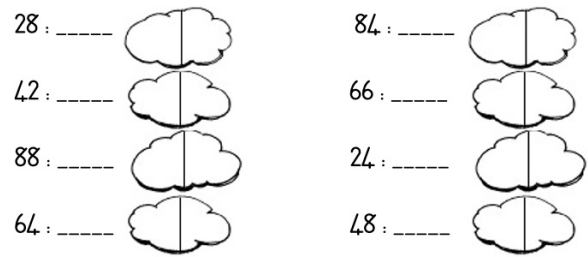


Figure 1.39

LO 1.10	
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Table 1.23

- Tommy did 24 sums, but half of them were wrong. How many were correct? He had _____ sums correct.
- Divide 10 apples between Bonny and Tommy equally.



Figure 1.40

Each gets 5 apples.
This is the same as halving. Number sentence: $10 \div 2 = 5$

- Think!

$6 \div 2 = \underline{\hspace{2cm}}$	$20 \div 2 = \underline{\hspace{2cm}}$
$16 \div 2 = \underline{\hspace{2cm}}$	$8 \div 2 = \underline{\hspace{2cm}}$
$10 \div 2 = \underline{\hspace{2cm}}$	$14 \div 2 = \underline{\hspace{2cm}}$
$2 \div 2 = \underline{\hspace{2cm}}$	$12 \div 2 = \underline{\hspace{2cm}}$
$18 \div 2 = \underline{\hspace{2cm}}$	$4 \div 2 = \underline{\hspace{2cm}}$

Figure 1.41

-
- $\div 2$ can also mean that you must divide 10 into groups of 2. Then you must calculate how many groups there are.
-



Figure 1.42

-
- I see 10 wheels. How many bicycles are there?

There are _____ bicycles.

Number sentence: $10 \div 2 = 5$

- Tommy sees 12 ears above the bush. How many rabbits are there? Draw the 12 ears and group them into 2's.

Now you can count how many rabbits are hiding behind the bush. $12 \div 2 =$

_____ There are _____ rabbits.

LO 1.7	
--------	--

Table 1.24

1.6.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.7: We know this when the learner solves and explains solutions to practical problems that involve equal sharing and grouping and that lead to solutions that also include unitary and nonunitary fractions (e.g. $1\frac{1}{4}$, $\frac{3}{4}$);

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems involving:

- 1.8.1 addition and subtraction of whole numbers with at least 3 digits;
- 1.8.2 multiplication of at least whole 2-digit by 1-digit numbers;
- 1.8.3 division of at least whole 2-digit by 1-digit numbers;

- estimation;

Assessment Standard 1.9: We know this when the learner performs mental calculations involving:

- 1.9.1 addition and subtraction for numbers to at least 50;
- 1.9.2 multiplication of whole numbers with solutions to at least 50;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

- 1.10.1 building up and breaking down numbers;
- 1.10.2 doubling and halving;
- 1.10.3 number-lines;
- 1.10.4 rounding off in tens.

1.7 Counting in tens⁷

1.7.1 MATHEMATICS

1.7.2 Meet Bonny and Tommy

1.7.3 EDUCATOR SECTION

1.7.4 Memorandum

Count in tens regularly, forwards and backwards, from any number.

E.g. 4 14 24 34 44 54 64 74 84 94

97 87 77 67 57 47 37 27 17 7

The learners should be aware of how important the number 10 is in our number system (decimal system).

They should know the combinations of 10 very well and must be tested regularly. Much practice is required.

⁷This content is available online at <<http://cnx.org/content/m22714/1.1/>>.

1.7.5 LEANER SECTION

1.7.6 Content

1.7.6.1 ACTIVITY: Counting in tens [LO 1.3, LO 1.11, LO 1.8, LO 2.2, LO 1.7]

1	2	3	4	5	6	7	8	9	10
11							A		20
21			B						30
31									40
41						C			50
51		D							60
61					E				70
71	F								80
81				G					90
91								H	100

Figure 1.43

- Write down the number and number name for each letter:

A: _____
 B: _____
 C: _____
 D: _____
 E: _____
 F: _____
 G: _____
 H: _____

LO 1.3	
--------	--

Table 1.25

- Look carefully at: 1 ; 11 ; 21 ; 31 ; 41 ; 51 ; 61 ; 71 ; 81 ; 91

Which numbers come under 5 and 9 ?

5 : 15 ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; 95
 9 : _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; 99

- Count in tens. Now begin with:

3 ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; 93

- Count backwards in tens:

93 ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; 3

LO 1.11	
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Table 1.26

Bonny and Tommy have made these “tens bugs”.

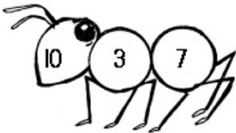


Figure 1.44

- The two circles connecting them are equal to 10.

$3 + 7 = 10$ $7 + 3 = 10$

- Fill in the missing numbers.

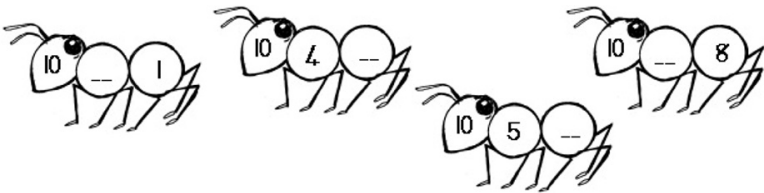


Figure 1.45

- Complete:

7 and 3
_____ and 9
_____ and 5

3 and 7
9 and ____
5 and ____
____ and 8
____ and 6
8 and ____
6 and ____
Let's say that 10 's 3 breaks off, then 7 remains.
Number sentence: $10 - 3 = 7$
If 10 's 7 breaks off, then 3 remains.
Number sentence: $10 - 7 = 3$

- Think!

$3 + ____ = 10$	$____ + 4 = 10$	$10 - 5 = ____$	$10 - 6 = ____$
$9 + ____ = 10$	$____ + 5 = 10$	$10 - 1 = ____$	$10 - 5 = ____$
$5 + ____ = 10$	$____ + 1 = 10$	$10 - 7 = ____$	$10 - 9 = ____$
$2 + ____ = 10$	$____ + 3 = 10$	$10 - 4 = ____$	$10 - 3 = ____$
$6 + ____ = 10$	$____ + 2 = 10$	$10 - 2 = ____$	$10 - 8 = ____$

Figure 1.46

Always think of the two parts!

LO 1.8	
--------	--

Table 1.27

- Help Bonny and Tommy to add all the numbers on the cards as quickly as possible. Can you think of a quick way? Show what you are doing.

<div>6</div> <div>9</div> <div>2</div> <div>5</div> <div>8</div> <div>3</div> <div>5</div> <div>2</div> <div>6</div> <div>5</div> <div>4</div> <div>1</div> <div>5</div> <div>7</div> <div>4</div> <div>3</div>					
				Total:	
Do these:					
<div>10</div> <div>2</div> <div>6</div> <div>8</div> <div>5</div>	<div>5</div>	<div>20</div> <div>7</div> <div>6</div> <div>4</div> <div>9</div>	<div>3</div>		
<div>10</div> <div>8</div> <div>7</div> <div>2</div>	<div>40</div>	<div>10</div> <div>8</div> <div>5</div> <div>1</div> <div>30</div> <div>9</div>	<div>5</div>		
continued on next page					

Table 1.28

- The ripe apples are equal to 10. Only colour the ripe apples.

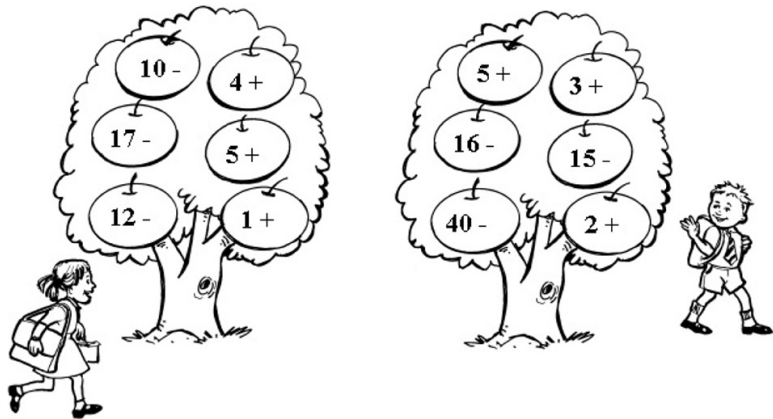


Figure 1.47

LO 1.8	
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Table 1.29

- Bonny says:

Complete the patterns.

$6 + 4 = 10$	$8 + 2 = 10$	$5 + 5 = 10$
$16 + 4 = 20$	$18 + 2 = \underline{\hspace{2cm}}$	$15 + 5 = \underline{\hspace{2cm}}$
$26 + 4 = 30$	$28 + 2 = \underline{\hspace{2cm}}$	$25 + 5 = \underline{\hspace{2cm}}$
$56 + 4 = \underline{\hspace{2cm}}$	$48 + 2 = \underline{\hspace{2cm}}$	$35 + 5 = \underline{\hspace{2cm}}$
$86 + 4 = \underline{\hspace{2cm}}$	$68 + 2 = \underline{\hspace{2cm}}$	$75 + 5 = \underline{\hspace{2cm}}$

Figure 1.48

- Tommy says:

Complete these patterns.

10 - 3 = 7	10 - 1 = 9	10 - 6 = 4
20 - 3 = 17	20 - 1 = ____	20 - 6 = ____
30 - 3 = ____	30 - 1 = ____	30 - 6 = ____
50 - 3 = ____	60 - 1 = ____	40 - 6 = ____
80 - 3 = ____	90 - 1 = ____	70 - 6 = ____

Figure 1.49

LO 2.2	
--------	--

Table 1.30

- Use your own method to solve the problem. You may draw as well.

Divide 30 smarties among Bonny and Tommy and their friend, Terry, so that they all get the same number. How many smarties will each one get?

- Each will get _____

LO 1.7	
--------	--

Table 1.31

1.7.7 Assessment

Learning Outcome 1:The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.3: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;

Assessment Standard 1.7: We know this when the learner solves and explains solutions to practical problems that involve equal sharing and grouping and that lead to solutions that also include unitary and nonunitary fractions (e.g. $1\frac{1}{4}$, $\frac{3}{4}$);

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems involving:

- 1.8.1 addition and subtraction of whole numbers with at least 3 digits;
- 1.8.2 multiplication of at least whole 2-digit by 1-digit numbers;
- 1.8.3 division of at least whole 2-digit by 1-digit numbers;

- estimation;

Assessment Standard 1.9: We know this when the learner performs mental calculations involving:

- 1.9.1 addition and subtraction for numbers to at least 50;
- 1.9.2 multiplication of whole numbers with solutions to at least 50;

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.2: We know this when the learner copies and extends simple number sequences to at least 1 000.

1.8 Rounding off⁸

1.8.1 MATHEMATICS

1.8.2 Meet Bonny and Tommy

1.8.3 EDUCATOR SECTION

1.8.4 Memorandum

1.8.5 LEARNER SECTION

1.8.6 Content

1.8.6.1 ACTIVITY: Rounding off [LO 1.8, LO 1.10]

- Get some counters from your teacher. Estimate how many you have. Write down your estimate.

I estimate _____

- Now group the counters on the desk in tens and units.
- Count them and write: I have _____
- How was your estimate: too many, too few or just right?

Write: I estimated _____

By how many were you out? _____

- Is your number closer to 40, closer to 50 or equally far away from both?

Write: My number is _____

- How can you make your number equal to 50?

Write: I can add _____ + _____ = 50

- If you have added 5 or less than 5, 50 is your nearest multiple of ten.
- How can you make your number equal to 40?

Write: I can subtract _____ : _____ - _____ = 40

- If you subtracted 4 or less than 4, then 40 is your nearest multiple of ten.

LO 1.8	
--------	--

Table 1.32

⁸This content is available online at <<http://cnx.org/content/m22716/1.1/>>.

To round off a number to the nearest ten you must know which multiple of ten is closer to the number. If your number is the same distance from two multiples of ten, we use the greater multiple of ten.

- Look at the numbers and make an * next to the nearer multiple of ten.

43	40	50
49	40	50
46	40	50
41	40	50

Table 1.33

LO 1.10	
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Table 1.34

- Now help Bonny and Tommy to find the nearer multiple of ten.

Remember: If the units are 5 or more than 5,
we use the greater multiple.

- If the units are 4 or less than 4, we use the smaller multiple.

24: nearer multiple is 20 16: nearer multiple is 20

37: nearer multiple is _____ 52: nearer multiple is _____

15: nearer multiple is _____ 73: nearer multiple is _____

81: nearer multiple is _____ 94: nearer multiple is _____

- Round off to the nearer 10. (This will help you to estimate):

		Rounding off:
Bonny has 69 sweets.	→	Bonny has 70 sweets.
Tommy eats 8.	→	Tommy eats 10.
$69 - 8 = 61$	→	$70 - 10 = 60$
She has 61 left.	→	She has 60 left.

Figure 1.50

If we round off, it helps us to estimate what the answer should be more quickly.

Remember! This is not an accurate answer!

- Use rounding off and estimate first. Then do an accurate calculation. Write the rounded off number above the number.
- Tommy has 84c in his purse and buys a banana for 69c.

How much money does he have left?

Rounding off: Number sentence: _____

Calculate: Number sentence: _____

This will help you to estimate your change when you buy something.

LO 1.10	
---------	--

Table 1.35

- Bonny prefers to do her sums horizontally.

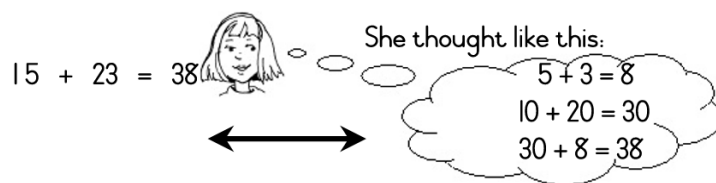


Figure 1.51

- Tommy prefers to do his sums vertically.

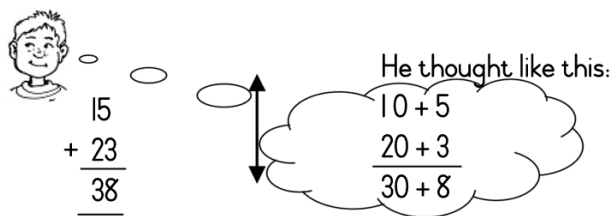


Figure 1.52

- Let's try both ways and then decide which is the easier.

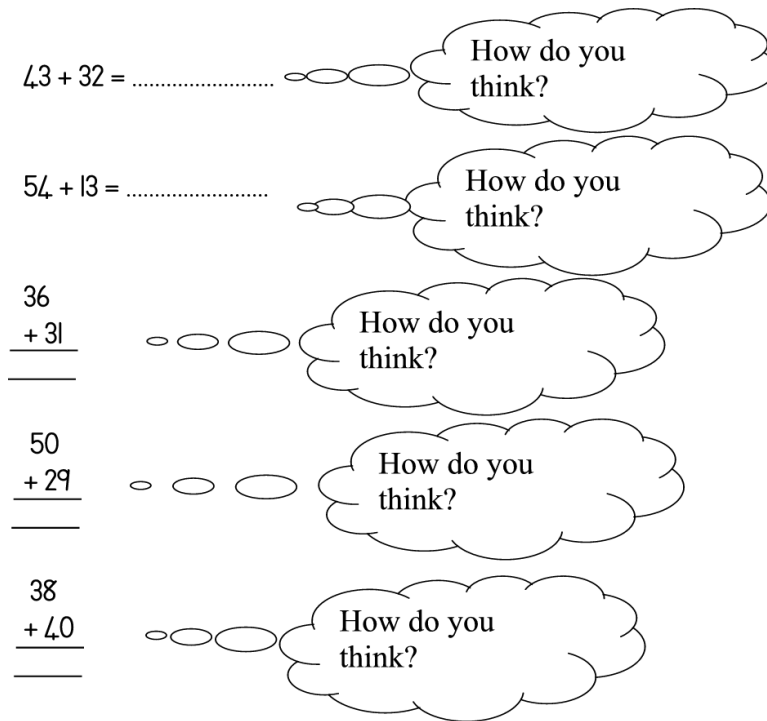


Figure 1.53

LO 1.8	
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Table 1.36

Bonny says: Subtraction is a bit different.

- NEVER rename the first number.



Figure 1.54

Check your answer: $12 + 64 = 76$

1.8.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems involving:

- 1.8.1 addition and subtraction of whole numbers with at least 3 digits;
- 1.8.2 multiplication of at least whole 2-digit by 1-digit numbers;
- 1.8.3 division of at least whole 2-digit by 1-digit numbers;

- estimation;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

- 1.10.1 building up and breaking down numbers;
- 1.10.2 doubling and halving;
- 1.10.3 number-lines;
- 1.10.4 rounding off in tens.

1.9 Number name⁹

1.9.1 MATHEMATICS

1.9.2 Bonny and Tommy take a look at the seasons

1.9.3 EDUCATOR SECTION

1.9.4 Memorandum

This module still consists mostly of activities for consolidation, reinforcement and assessment of the work taught in the previous grades focusing on the number 100.

- **Number concept** to 200.
- **Operations:** - Consolidates all work covered in Grade 1 en 2.

The names of the months and the correct spelling thereof need to be attended to. Discussions about the seasons and a healthy environment (nature conservation) will provide opportunities for the integration with other learning areas.

Weather charts for the different seasons can be recorded e.g. February – summer; May – autumn; August – winter; November – spring. These are not the best months for the seasons but they are the months in which the learners attend school for the whole month. Complete a bar graph for every weather chart so that weather conditions can be compared and discussed. Having completed all the bar graphs these can be compared to one another and the learners can discover weather conditions relevant to their own regions as well as those relevant to each season. The educator can keep the graphs to compare the statistics with the next year's graphs.

The tasks and activities in Learning Unit 2 are still mainly intended for consolidation of work covered in previous grades. It is essential, however, that educators continue to make use of concrete apparatus to repeat, explain and consolidate all concepts that were not fully mastered before.

It is of the utmost importance that learners must be totally familiar with the tens grouping of our numbers system:

- 10 ones** are grouped as **1 group of ten**
- 10 tens** are grouped as **1 group of a hundred**
- 10 groups of a hundred** are grouped as **1 group of a thousand**, etc.

⁹This content is available online at <<http://cnx.org/content/m32019/1.1/>>.

Learners must work with counters that have been grouped in **hundreds**, **tens** and **units**. Should counters not be available, the following semi-concrete apparatus can be used.

Learners must work with counters that have been grouped in **hundreds**, **tens** and **units**. Should counters not be available, the following semi-concrete apparatus can be used.

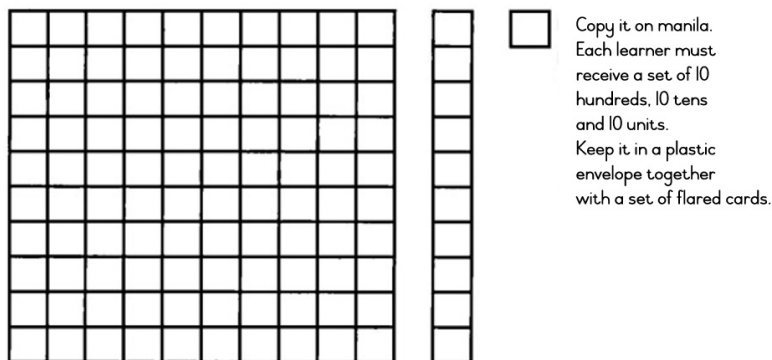


Figure 1.57

The expansion cards (flared cards) are very useful in explaining **place values**, **renaming**, **unifying of numbers** and the **0 as place-keeper**.

Attached you will find an example of expansion cards (flared cards) and a key to writing all number names. Flared cards enable learners to build any number, and if learners know the basic number names, they can construct and write any number name from the given parts. Give each learner a copy to use, for example

Example:

Number name: one thousand one hundred and thirty seven

Number: | 137

1000

100

30

7

1	2	3	4	5	6	7	8	9
10	20	30	40	50				
60	70	80	90					
100	200	300						
400	500	600						
700	800	900						
1000	2000							
4000	5000							
6000	7000							
8000	9000							

Figure 1.58

If you wish to use this example, enlarge it and copy it on manilla.

0 nought 1 one 2 two 3 three 4 four 5 five 6 six 7 seven 8 eight 9 nine 10 ten 11 eleven 12 twelve 13 thirteen 14 fourteen 15 fifteen 16 sixteen 17 seventeen 18 eighteen 19 nineteen	20 twenty21 twenty one22 twenty two23 twenty three24 twenty four25 twenty five26 twenty six27 twenty seven28 twenty eight29 twenty nine
	10 ten20 twenty30 thirty40 forty50 fifty60 sixty70 seventy80 eighty90 ninety
continued on next page	

100 one hundred 200 two hundred 300 three hundred 400 four hundred 500 five hundred 600 six hundred 700 seven hundred 800 eight hundred 900 nine hundred	101 one hundred and one102 one hundred and two103 one hundred and three104 one hundred and four105 one hundred and five106 one hundred and six107 one hundred and seven108 one hundred and eight109 one hundred and nine
1 000 one thousand 3 000 three thousand 5 000 five thousand 7 000 seven thousand 9 000 nine thousand	2 000 two thousand4 000 four thousand6 000 six thousand8 000 eight thousand10 000 ten thousand
	111 one hundred and eleven112 one hundred and twelve113 one hundred and thirteen114 one hundred and fourteen115 one hundred and fifteen116 one hundred and sixteen117 one hundred and seventeen118 one hundred and eighteen119 one hundred and nineteen120 one hundred and twenty121 one hundred and twenty one122 one hundred and twenty two123 one hundred and twenty three124 one hundred and twenty four125 one hundred and twenty five126 one hundred and twenty six127 one hundred and twenty seven128 one hundred and twenty eight129 one hundred and twenty nine
	110 one hundred and ten120 one hundred and twenty130 one hundred and thirty140 one hundred and forty150 one hundred and fifty160 one hundred and sixty170 one hundred and seventy180 one hundred and eighty190 one hundred and ninety

Table 1.38

Frontpage.

It is essential to have an initial discussion on the changing of the seasons. Some learners may find it very stimulating to discover what causes seasons and why there are different seasons in the year.

Learners must complete the pictures by adding their own drawings to illustrate the typical seasonal qualities, e.g.:

Spring: flowers and blossoms; 2. Summer: anything to do with the seaside or the swimming pool; 3. Autumn: leaves in autumn colours on trees and the ground; 4. Winter: snow on the mountains or rain (where applicable), and leafless trees. Discuss it with the learners.

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This example has been done further than the one on the work sheet, but it can be used for the whole year. Besides, there are learners who are able and keen to count in 6,7,8 and 9.

Show the learners how to find the answers to the tables, x and + from the chart.

Example: $2 \times 4 = 8$ Go right from 2 and above from 4 downwards – meet at 8 (see arrows)

$15 \div 3 = 5$ Go left from 15 to 3 and up from 15 - 5th multiple

Multiples: Count up to the 10th multiple and back.

Count in:

	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30

Count up to the 10th multiple and back.

Count in: ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

Figure 1.59

At this stage the learners must know that $100c = R1$. The learners now have a good concept of 100 and will realise that $120c$ equal R1 plus $20c$, thus they can now learn to write it correctly, namely $120c = R1,20$. Master it up to $199c = R1,99$.

Once they have mastered it, do the reverse: $R1,20 = 120c$ up to $R1,99 = 199c$.

It is imperative that the learners understand the **completion** and **solution of a ten** completely. This is an investment for the future. The more **concrete work** that is done here, the better the learners' understanding of these concepts. They must be able to **relate** what they are doing. If they cannot **say** how they arrived at an answer, it means that the concrete image has not been properly consolidated. Give them **many** and **regular exercises** of this kind.

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- Various triangles: the isosceles; equilateral and rectangular and any other types of triangle.
- Various rectangles and squares.

(iii) Protractors and rulers, enough for everyone in the group.

First establish what the learners already know about the **sides** and **angles** of triangles, rectangles and squares.

Measuring angles:

Explain what a **right angle** is (angle equal to 90°) if they do not know it. Show the learners the **protractor** and how to measure an angle with it. Make sure that they know exactly how to measure angles.

Let them measure the angles of the various forms on the mat. They must say what they have discovered about the **angles** of the triangles, rectangles and squares.

All the angles of the rectangles and the squares are **right angles**. Give them the opportunity to discover other **right angles** in the classroom.

Have they discovered that a triangle never has more than one right angle? A triangle with a right angle is called a **rectangular triangle**.

Measuring sides:

Give the learners rulers to measure the sides. Make very sure that all the learners know how to measure using a ruler.

They must discover their own:

There are triangles of which the 3 sides are of the same length. That is an equilateral triangle.

There are triangles of which 2 sides are the same length. That is an isosceles triangle.

There are triangles of which the sides are all different.

The 4 sides of a square are of equal length.

The 2 opposite sides of a rectangle are the same length.

This work will probably not all be done in one mat session, and the time needed will vary depending on the group involved. It is advisable to complete measuring angles in one session and measuring sides in another.

If the learners have already mastered halving of unequal numbers, it is only necessary to explain how to write $\frac{1}{2}$. That means 1 of the 2 parts into which it has been divided:

1	is numerator
2	is denominator

Table 1.39

This is about halving 3,5,7 or 9 **groups of ten**. There is always **1 ten** that must be solved. Encourage the learners to regroup before they halve. They must first do it concretely on the mat.

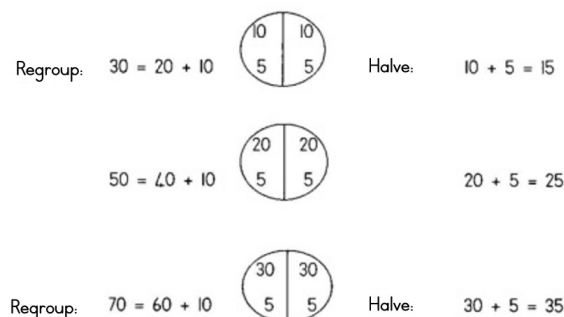



Figure 1.60

$$90 = 80 + 10$$


$$40 + 5 = 45$$

Figure 1.61

Every time the numbers 6 to 9 are doubled, a ten is completed.
The learners must indicate it on the work sheet by drawing a circle around the ten.

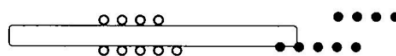


Figure 1.62

If there is no calculator available, the educator or one of the learners can write the answers on the blackboard after completing the work sheet. However, the learners who are able to do the calculations on their own, must be allowed to do it.

Encourage the learners to persevere until they find the right “path”. They may require an extra sheet of paper on which to write the numbers while trying to find the correct ones.⁷

1.9.5 LEARNER SECTION

1.9.6 Content

1.9.6.1 ACTIVITY: Number name [LO 1.1, LO 1.3, LO 1.10, LO 4.2, LO 5.4]

Here is Bonny and Tommy’s “year and season clock”. It is called a clock, because it goes around and around like other clocks.

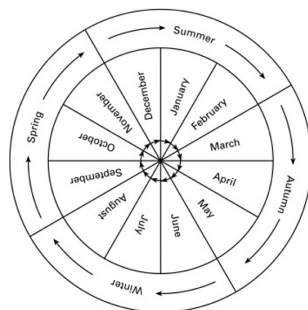


Figure 1.63

- Use their “**clock**” and complete the sentences:
- There are _____ seasons in a year.
- _____ and _____ are the **main seasons**.
- _____ and _____ are the **transitional seasons**.
- Make an * (on the clock) next to the season and the month in which we are now.
- Which season do you like **best**? _____
- **Why?** _____
- There are _____ months in a **year**.
- There are _____ months in each **season**.

- **Bonny** and **Tommy** have made a graph

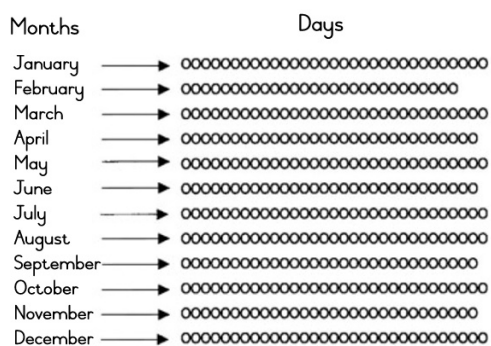


Figure 1.64

- Count the number of days in each month and **write it** next to the graph.

Complete:

1. _____ is the shortest month. It has ____ days.
2. January, March, May, July, August, October en Decembers have ____ days.
3. _____, _____ and _____ have 30 days.
4. _____ is **the first** and _____ is the **last month** of the year.
5. _____ comes just after September. _____ comes just before April.

An ordinary year has 365 days, but a leap year has 366 days.

Find out:

- To which month is the extra day added? _____
- When is the next leap year? _____
- Which world famous sporting event, where competitors participate in many different sports, takes place every leap year? _____

Bonny and Tommy know the numbers and number names up to ninety nine.



Now we can go further!



	Hundreds	Tens	Units
 10 groups of ten are one hundred $99 + 1 = 100$	1	0	0

- © Draw a circle around the tens and **complete the last ten as well**. Then draw a circle around the **ten groups of ten** to make one group of hundred.

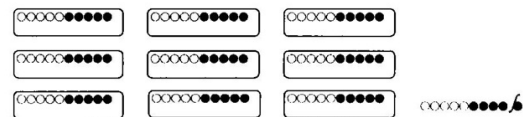
xxxxx xxxxx xxxxx xxxxx xxxxx
 xxxxx xxxxx xxxxx xxxxx xxxxx

 xxxxx xxxxx xxxxx xxxxx xxxxx
 xxxxx xxxxx xxxxx xxxxx xxx

Number sentence: $98 + \underline{\quad} = 100$

9	$+$	$\underline{\quad}$	$=$	100	92	$+$	$\underline{\quad}$	$=$	100	96	$+$	$\underline{\quad}$	$=$	100
5	$+$	$\underline{\quad}$	$=$	100	93	$+$	$\underline{\quad}$	$=$	100	91	$+$	$\underline{\quad}$	$=$	100
97	$+$	$\underline{\quad}$	$=$	100	98	$+$	$\underline{\quad}$	$=$	100	94	$+$	$\underline{\quad}$	$=$	100
99	$+$	$\underline{\quad}$	$=$	100										

- © Now we **regroup** the one hundred:



Number sentence: $100 - 1 = 99$

$100 - 5 = \underline{\quad}$	$100 - 1 = \underline{\quad}$	$100 - 6 = \underline{\quad}$
$100 - 3 = \underline{\quad}$	$100 - 7 = \underline{\quad}$	$100 - 2 = \underline{\quad}$
$100 - 8 = \underline{\quad}$	$100 - 4 = \underline{\quad}$	$100 - 9 = \underline{\quad}$

Figure 1.65

- Bonnie en Tommie sê: Onthou die 0 as plekhouer!
- Omkring die honderde. Skryf dan die getal en die getalname

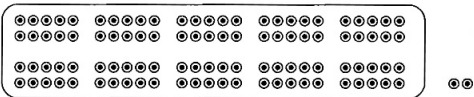

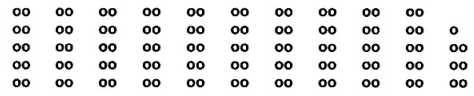
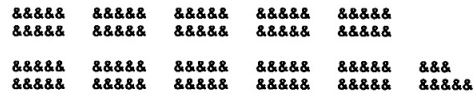
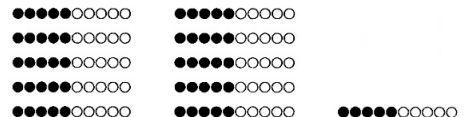
Bonny and Tommy say: Remember the 0 as a place holder!			
Draw a circle around the hundreds and write the number and the number name .			
	H	T	U
	1	0	2
Number name: one hundred and two			
			
Number name: _____			
			
Number name: _____			
			
Number name: _____			
			
Number name: _____			

Figure 1.66

- You have to know all the numbers and number names up to 200.

Fill in the missing numbers:

110	111	112	_____	_____	_____	119
126	127	128	_____	_____	_____	135
132	134	136	_____	142	_____	150
165	167	169	_____	175	_____	183
115	114	113	_____	_____	_____	106
200	198	196	_____	_____	_____	182

- Bonny** says you must know **how** to take numbers apart (rename).

Rename these numbers.

$$126 = 100 + 20 + 6$$

$$182 = _____ + _____ + _____$$

$$109 = _____ + _____$$

$$148 = 100 + _____ + _____$$

$$156 = _____ + _____ + _____$$

$$170 = _____ + _____ + _____$$

- **Tommy** says you must put the numbers together when you have finished working.

$$100 + 10 + 4 = 114$$

$$100 + 30 + 7 = _____$$

$$100 + 3 = _____$$

$$100 + 20 + 5 + _____$$

$$100 + 50 + 2 + _____$$

$$100 + 80 = _____$$

- Write down the above numbers and their number names: _____

- Which number comes **4 places after**?

$$104 : _____ \quad 116 : _____ \quad 140 : _____ \quad 169 : _____$$

- Which number comes **3 places after**?

$$109 : _____ \quad 113 : _____ \quad 160 : _____ \quad 191 : _____$$

- **Who wants to take a chance?** $125 + 143 = _____$

Bonny is looking for all the balloons with the **uneven numbers**. The balloons with the **even numbers** belong to **Tommy**. Lengthen the strings of the balloons so that each one holds the correct balloons.

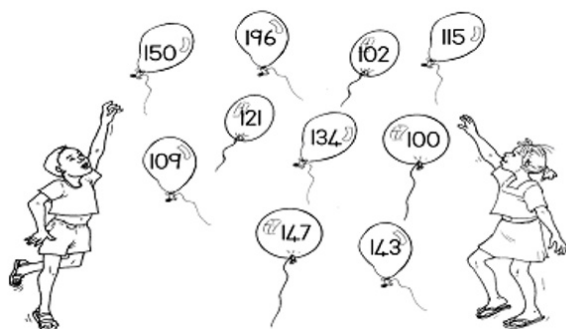


Figure 1.67

- Arrange the numbers on **Bonny's** balloons from the **most** to the **least**:

- Arrange the numbers on **Tommy's** balloons from the **least** to the **most**:

- Fill in =, < or >:

145	_____	154		100	+	3	_____	100	+	1
101	_____	110		70	+	30	_____	106	-	6
199	_____	195		120	-	20	_____	100	+	20
139	_____	141		100	+	5	_____	100	+	50
114	_____	111		100	+	9	_____	100	+	8

Table 1.40

- What is the **place value** of the **underlined digit** in each number?

108 The **place value** of the **1** is _____.

143 The **place value** of the **4** is _____.

17 1 The **place value** of the **1** is _____.

1.9.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:

1.1.1 the intervals specified in grade 2 with increased number ranges;

Assessment Standard 1.3: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;

1.10.2 doubling and halving;

1.10.3 number-lines;

1.10.4 rounding off in tens.

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.2: We know this when the learner solves problems involving calculations with and conversions;

Learning Outcome 5: The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

Assessment Standard 5.4: We know this when the learner reads, interprets and reports on information in own and a peer's representations of data.

1.10 Multiples¹⁰

1.10.1 MATHEMATICS

1.10.2 Bonny and Tommy take a look at the seasons

1.10.3 EDUCATOR SECTION

1.10.4 Memorandum

This module still consists mostly of activities for consolidation, reinforcement and assessment of the work taught in the previous grades focusing on the number 100.

- **Number concept** to 200.
- **Operations:** - Consolidates all work covered in Grade 1 en 2.

The names of the months and the correct spelling thereof need to be attended to. Discussions about the seasons and a healthy environment (nature conservation) will provide opportunities for the integration with other learning areas.

Weather charts for the different seasons can be recorded e.g. February – summer; May – autumn; August – winter; November – spring. These are not the best months for the seasons but they are the months in which the learners attend school for the whole month. Complete a bar graph for every weather chart so that weather conditions can be compared and discussed. Having completed all the bar graphs these can be compared to one another and the learners can discover weather conditions relevant to their own regions as well as those relevant to each season. The educator can keep the graphs to compare the statistics with the next year's graphs.

The tasks and activities in Learning Unit 2 are still mainly intended for consolidation of work covered in previous grades. It is essential, however, that educators continue to make use of concrete apparatus to repeat, explain and consolidate all concepts that were not fully mastered before.

It is of the utmost importance that learners must be totally familiar with the tens grouping of our numbers system:

10 ones are grouped as **1 group of ten**

10 tens are grouped as **1 group of a hundred**

10 groups of a hundred are grouped as **1 group of a thousand**, etc.

Learners must work with counters that have been grouped in **hundreds**, **tens** and **units**. Should counters not be available, the following semi-concrete apparatus can be used.

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¹⁰This content is available online at <<http://cnx.org/content/m32020/1.1/>>.

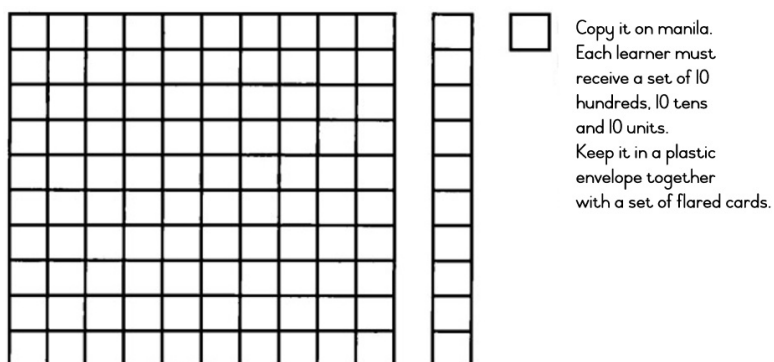


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100

30

7

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100	200	300						
400	500	600						
700	800	900						
1000	2000							
4000	5000							
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Figure 1.69

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0 nought 1 one 2 two 3 three 4 four 5 five 6 six 7 seven 8 eight 9 nine 10 ten 11 eleven 12 twelve 13 thirteen 14 fourteen 15 fifteen 16 sixteen 17 seventeen 18 eighteen 19 nineteen	20 twenty 21 twenty one 22 twenty two 23 twenty three 24 twenty four 25 twenty five 26 twenty six 27 twenty seven 28 twenty eight 29 twenty nine
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continued on next page	

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Count in:

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2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30

Count up to the 10th multiple and back.

Count in: ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
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Figure 1.70

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Have they discovered that a triangle never has more than one right angle? A triangle with a right angle is called a **rectangular triangle**.

Measuring sides:

Give the learners rulers to measure the sides. Make very sure that all the learners know how to measure using a ruler.

They must discover their own:

There are triangles of which the 3 sides are of the same length. That is an equilateral triangle.

There are triangles of which 2 sides are the same length. That is an isosceles triangle.

There are triangles of which the sides are all different.

The 4 sides of a square are of equal length.

The 2 opposite sides of a rectangle are the same length.

This work will probably not all be done in one mat session, and the time needed will vary depending on the group involved. It is advisable to complete measuring angles in one session and measuring sides in another.

If the learners have already mastered halving of unequal numbers, it is only necessary to explain how to write $\frac{1}{2}$. That means 1 of the 2 parts into which it has been divided:

1	is numerator
2	is denominator

Table 1.42

This is about halving 3,5,7 or 9 **groups of ten**. There is always **1 ten** that must be solved. Encourage the learners to regroup before they halve. They must first do it concretely on the mat.

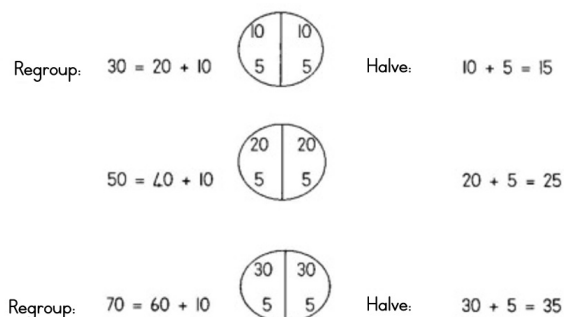


Figure 1.71

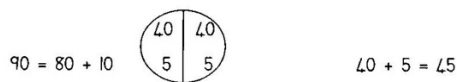


Figure 1.72

Every time the numbers 6 to 9 are doubled, a ten is completed.
The learners must indicate it on the work sheet by drawing a circle around the ten.

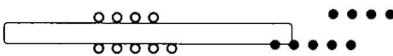


Figure 1.73

If there is no calculator available, the educator or one of the learners can write the answers on the blackboard after completing the work sheet. However, the learners who are able to do the calculations on their own, must be allowed to do it.

Encourage the learners to persevere until they find the right “path”. They may require an extra sheet of paper on which to write the numbers while trying to find the correct ones.⁷

1.10.5 LEARNER SECTION

1.10.6 Content

1.10.6.1 ACTIVITY: Multiples [LO 1.1, LO 1.6, LO 1.8, LO 1.9, LO 1.10]

- Multiples: Count up to the 10th multiple and back.
-

	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
10	10	20	30	40	50	60	70	80	90	100

Figure 1.74

Bonny and Tommy used the above chart to count in multiples of 2, 3, 4, 5 and 10. Use it to complete the worksheet.

2	4	_____	18	2	4	_____	18	2
8	12	_____	40	8	12	_____	40	8
45	40	_____	5	45	40	_____	5	45
30	27	_____	6	30	27	_____	6	30

Table 1.43

- Draw a circle around:

The multiples of 10:	20	100	36	50	42	30	21	60
The multiples of 4:	40	21	36	18	24	16	20	6
The multiples of 3:	27	32	18	24	10	30	20	12

Table 1.44

The 4th **multiple of 2** is _____. 20 is the _____th **multiple of 2**.
 The 3rd **multiple of 3** is _____. 21 is the _____th **multiple of 3**.
 The 2nd **multiple of 4** is _____. 28 is the _____th **multiple of 4**.
 The 6th **multiple of 5** is _____. 40 is the _____th **multiple of 10**.
 How many eyes do nine rabbits have? _____ eyes
 How many wheels do 7 tricycles have? _____ wheels
 How many fingers do 4 children have? _____ fingers

Bonny and Tommy earn their pocket money by doing jobs around the house. They receive 10c for every job they do.

Now we must count their pocket money.

Remember: 10 ten cent coins are R1 or $100c = R1$

- Here is **Bonny's** pocket money.

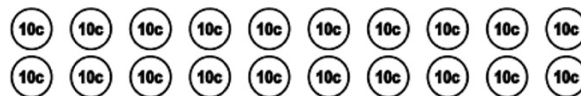


Figure 1.75

- **Bonny** earned _____
- How many jobs did she do?

She did _____ jobs.

- Here is **Tommy's** pocket money.

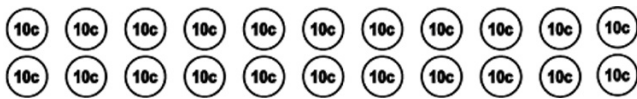


Figure 1.76

- **Tommy** earned _____
- How many jobs did she do?

She did _____ jobs.

- **Tommy** earned _____ c more than **Bonny**, because he did _____ more jobs than Bonny.

Bonny and Tommy have discovered the **pattern** to count in tens.

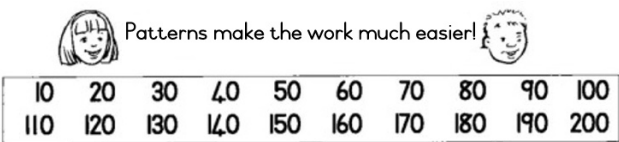


Figure 1.77

-
- Complete:

10	20	---	---	---	---	---	---	---	---	110	---
50	60	---	---	---	100	---	---	---	---	150	---
80	90	---	---	---	---	140	---	---	---	---	---
110	100	---	80	---	---	---	---	---	---	---	0
180	---	160	---	140	---	---	---	---	---	---	70

Table 1.45

Use your own methods to solve the problems.

- Yesterday there were 1 10 children on the soccer field. Today there are 10 more. How many children are there today?

There are _____ children today.

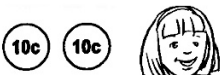
- Dad planted 140 carrots, but Bonny and Tommy have already eaten 30. How many carrots are left in the garden?

There are _____.

$\begin{array}{r} 120 \\ + 20 \\ \hline \end{array}$	$\begin{array}{r} 160 \\ + 10 \\ \hline \end{array}$	$\begin{array}{r} 110 \\ + 50 \\ \hline \end{array}$	$\begin{array}{r} 130 \\ + 30 \\ \hline \end{array}$	$\begin{array}{r} 150 \\ + 40 \\ \hline \end{array}$
$\begin{array}{r} 140 \\ - 30 \\ \hline \end{array}$	$\begin{array}{r} 180 \\ - 50 \\ \hline \end{array}$	$\begin{array}{r} 150 \\ - 50 \\ \hline \end{array}$	$\begin{array}{r} 190 \\ - 70 \\ \hline \end{array}$	$\begin{array}{r} 160 \\ - 20 \\ \hline \end{array}$


Figure 1.78

- **Bonny and Tommy** say that **10 x and \div** are easy, because they know how to work with money.



2 ten cent coins = 20c
 $10 \times 2 = 20$
Think!
 $10 \times 4 = \underline{\hspace{2cm}}$
 $10 \times 7 = \underline{\hspace{2cm}}$
 $10 \times 1 = \underline{\hspace{2cm}}$
 $10 \times 6 = \underline{\hspace{2cm}}$
 $10 \times 3 = \underline{\hspace{2cm}}$
 $10 \times 9 = \underline{\hspace{2cm}}$
 $10 \times 5 = \underline{\hspace{2cm}}$
 $10 \times 2 = \underline{\hspace{2cm}}$
 $10 \times 8 = \underline{\hspace{2cm}}$
 $10 \times 10 = \underline{\hspace{2cm}}$

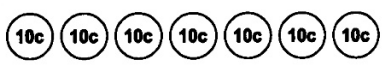
50 ÷ 10 = 5



50c = 5 ten cent coins
Think!
 $40 \div 10 = 4$
 $20 \div 10 = \underline{\hspace{2cm}}$
 $60 \div 10 = \underline{\hspace{2cm}}$
 $90 \div 10 = \underline{\hspace{2cm}}$
 $50 \div 10 = \underline{\hspace{2cm}}$
 $80 \div 10 = \underline{\hspace{2cm}}$
 $30 \div 10 = \underline{\hspace{2cm}}$
 $10 \div 10 = \underline{\hspace{2cm}}$
 $100 \div 10 = \underline{\hspace{2cm}}$
 $70 \div 10 = \underline{\hspace{2cm}}$


120c = R1,20 150c = R_____ 110c = R_____

140c = R_____ 180c = R_____ 160c = R_____



7 ten cent coins = 70c
 $10 \times 7 = 70$
Change around: $4 \times 10 = \underline{\hspace{2cm}}$
 $7 \times 10 = \underline{\hspace{2cm}}$
 $\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
 $\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
 $\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
 $\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
 $\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
 $\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

90 ÷ 10 = 9



90c = 9 ten cent coins
Change around: $40 \div 4 = 10$
 $20 \div \underline{\hspace{2cm}} = 10$
 $60 \div \underline{\hspace{2cm}} = 10$
 $90 \div \underline{\hspace{2cm}} = 10$
 $50 \div \underline{\hspace{2cm}} = 10$
 $80 \div \underline{\hspace{2cm}} = 10$
 $30 \div \underline{\hspace{2cm}} = 10$
 $10 \div \underline{\hspace{2cm}} = 10$
 $100 \div \underline{\hspace{2cm}} = 10$
 $70 \div \underline{\hspace{2cm}} = 10$

Figure 1.79

- Do you still remember the "tens bugs"?

Bonny and Tommy use the "tens bugs" to do their other sums.

Solve!

- ☉ Mary had 9 sums correct and Peter had 8 correct. How many did they have correct altogether?

Number sentence: $9 + 8 = \underline{\hspace{2cm}}$



Regroup: $10 \quad 7$

- ☉ Bonny and Tommy regrouped $9 + 8$ to $10 + 7$. That is 17.

Now you must **regroup** too. Draw a circle around the group of 10.

Number sentence: $9 + 4 = \underline{\hspace{2cm}}$



Regroup: $\underline{\hspace{2cm}} \quad \underline{\hspace{2cm}}$

Number sentence: $8 + 6 = \underline{\hspace{2cm}}$



Regroup: $\underline{\hspace{2cm}} \quad \underline{\hspace{2cm}}$

Number sentence: $7 + 5 = \underline{\hspace{2cm}}$



Regroup: $\underline{\hspace{2cm}} \quad \underline{\hspace{2cm}}$

Figure 1.80

Bonny says we must do it without the dots now.

$$9 + 4 = (9 + 1) + 3 = \underline{\hspace{2cm}}$$

$$8 + 6 = (8 + \underline{\hspace{1cm}}) + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

$$7 + 5 = (7 + \underline{\hspace{1cm}}) + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

$$6 + 6 = (6 + \underline{\hspace{1cm}}) + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

- **Tommy** says he changes the numbers around sometimes, because he finds it easier to group the higher number as a ten. **Watch carefully how he does it.**

$$4 + 8 = 8 + 4 = (8 + 2) + 2 = 12$$

$$5 + 9 = 9 + 5 = (9 + \underline{\hspace{1cm}}) + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

$$6 + 8 = 8 + 6 = (8 + \underline{\hspace{1cm}}) + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

$$3 + 9 = 9 + 3 = (9 + \underline{\hspace{1cm}}) + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

$$4 + 7 = 7 + 4 = (7 + \underline{\hspace{1cm}}) + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

- Complete:

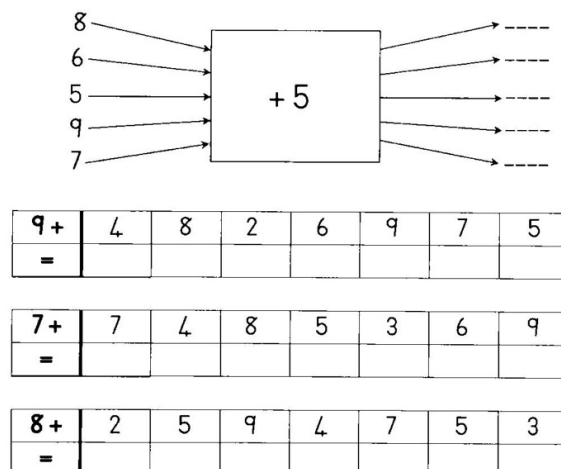


Figure 1.81

1.10.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:

1.1.1 the intervals specified in grade 2 with increased number ranges;

Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents;

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;

1.10.2 doubling and halving;

1.10.3 number-lines;

1.10.4 rounding off in tens.

1.11 Grouping¹¹

1.11.1 MATHEMATICS

1.11.2 Bonny and Tommy take a look at the seasons

1.11.3 EDUCATOR SECTION

1.11.4 Memorandum

This module still consists mostly of activities for consolidation, reinforcement and assessment of the work taught in the previous grades focusing on the number 100.

- **Number concept** to 200.
- **Operations:** - Consolidates all work covered in Grade 1 en 2.

The names of the months and the correct spelling thereof need to be attended to. Discussions about the seasons and a healthy environment (nature conservation) will provide opportunities for the integration with other learning areas.

Weather charts for the different seasons can be recorded e.g. February – summer; May – autumn; August – winter; November – spring. These are not the best months for the seasons but they are the months in which the learners attend school for the whole month. Complete a bar graph for every weather chart so that weather conditions can be compared and discussed. Having completed all the bar graphs these can be compared to one another and the learners can discover weather conditions relevant to their own regions as well as those relevant to each season. The educator can keep the graphs to compare the statistics with the next year's graphs.

The tasks and activities in Learning Unit 2 are still mainly intended for consolidation of work covered in previous grades. It is essential, however, that educators continue to make use of concrete apparatus to repeat, explain and consolidate all concepts that were not fully mastered before.

It is of the utmost importance that learners must be totally familiar with the tens grouping of our numbers system:

10 ones are grouped as **1 group of ten**

10 tens are grouped as **1 group of a hundred**

10 groups of a hundred are grouped as **1 group of a thousand**, etc.

Learners must work with counters that have been grouped in **hundreds**, **tens** and **units**. Should counters not be available, the following semi-concrete apparatus can be used.

Learners must work with counters that have been grouped in **hundreds**, **tens** and **units**. Should counters not be available, the following semi-concrete apparatus can be used.

¹¹This content is available online at <<http://cnx.org/content/m32021/1.1/>>.

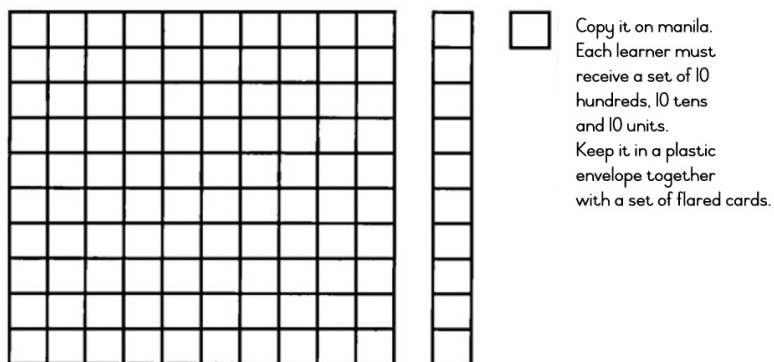


Figure 1.82

The expansion cards (flared cards) are very useful in explaining **place values, renaming, unifying of numbers** and the **0 as place-keeper**.

Attached you will find an example of expansion cards (flared cards) and a key to writing all number names. Flared cards enable learners to build any number, and if learners know the basic number names, they can construct and write any number name from the given parts. Give each learner a copy to use, for example

Example:

Number name: one thousand one hundred and thirty seven

Number: | 137

1000

100

30

7

1	2	3	4	5	6	7	8	9
10	20	30	40	50				
60	70	80	90					
100	200	300						
400	500	600						
700	800	900						
1000	2000							
4000	5000							
6000	7000							
8000	9000							

Figure 1.83

If you wish to use this example, enlarge it and copy it on manilla.

0 nought 1 one 2 two 3 three 4 four 5 five 6 six 7 seven 8 eight 9 nine 10 ten 11 eleven 12 twelve 13 thirteen 14 fourteen 15 fifteen 16 sixteen 17 seventeen 18 eighteen 19 nineteen	20 twenty21 twenty one22 twenty two23 twenty three24 twenty four25 twenty five26 twenty six27 twenty seven28 twenty eight29 twenty nine
	10 ten20 twenty30 thirty40 forty50 fifty60 sixty70 seventy80 eighty90 ninety
continued on next page	

100 one hundred 200 two hundred 300 three hundred 400 four hundred 500 five hundred 600 six hundred 700 seven hundred 800 eight hundred 900 nine hundred	101 one hundred and one102 one hundred and two103 one hundred and three104 one hundred and four105 one hundred and five106 one hundred and six107 one hundred and seven108 one hundred and eight109 one hundred and nine
1 000 one thousand 3 000 three thousand 5 000 five thousand 7 000 seven thousand 9 000 nine thousand	2 000 two thousand4 000 four thousand6 000 six thousand8 000 eight thousand10 000 ten thousand
	111 one hundred and eleven112 one hundred and twelve113 one hundred and thirteen114 one hundred and fourteen115 one hundred and fifteen116 one hundred and sixteen117 one hundred and seventeen118 one hundred and eighteen119 one hundred and nineteen120 one hundred and twenty121 one hundred and twenty one122 one hundred and twenty two123 one hundred and twenty three124 one hundred and twenty four125 one hundred and twenty five126 one hundred and twenty six127 one hundred and twenty seven128 one hundred and twenty eight129 one hundred and twenty nine
	110 one hundred and ten120 one hundred and twenty130 one hundred and thirty140 one hundred and forty150 one hundred and fifty160 one hundred and sixty170 one hundred and seventy180 one hundred and eighty190 one hundred and ninety

Table 1.46

Frontpage.

It is essential to have an initial discussion on the changing of the seasons. Some learners may find it very stimulating to discover what causes seasons and why there are different seasons in the year.

Learners must complete the pictures by adding their own drawings to illustrate the typical seasonal qualities, e.g.:

Spring: flowers and blossoms; 2. Summer: anything to do with the seaside or the swimming pool; 3. Autumn: leaves in autumn colours on trees and the ground; 4. Winter: snow on the mountains or rain (where applicable), and leafless trees. Discuss it with the learners.

Learners are now expected to know the names of the seasons in the correct order, and to write them down. A “year and seasons clock” can be put up in the classroom, which can help the learners to master writing the names.

Explain the origin of the extra day every 4 years to the learners. Some of the learners may understand it at this stage, but it cannot be expected of them at all.

This work sheet may elicit a discussion on the Olympic games.

It is important that the learners must understand that if 1 is added to the 9 units of 99, there is another group of ten. There are now 10 groups of ten altogether, which are grouped together to make 1 group of a hundred.

Likewise, they must understand that if they want to take away units from a hundred, they first have to dissolve the group of one hundred, and then dissolve 1 group of ten, before they will have units to take away.

The 0 as place-keeper might cause problems for some learners, Therefore it is essential that the learners must use counters that are grouped in hundreds, tens and units (or the copied blocks), as well as the flared cards, when this work is being done. If necessary, provide similar activities.

If the learners find it difficult to master place values, lay out the numbers with the flared cards.

On the next page there is an example of the multiples chart. It can be utilised very effectively, therefore it is suggested that each learner is given a copy.

This example has been done further than the one on the work sheet, but it can be used for the whole year. Besides, there are learners who are able and keen to count in 6,7,8 and 9.

Show the learners how to find the answers to the tables, \times and $+$ from the chart.

Example: $2 \times 4 = 8$ Go right from 2 and above from 4 downwards – meet at 8 (see arrows)

$15 \div 3 = 5$ Go left from 15 to 3 and up from 15 - 5th multiple

Multiples: Count up to the 10th multiple and back.

Count in:

	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30

Count up to the 10th multiple and back.

Count in: ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

Figure 1.84

At this stage the learners must know that $100c = R1$. The learners now have a good concept of 100 and will realise that $120c$ equal R1 plus $20c$, thus they can now learn to write it correctly, namely $120c = R1,20$. Master it up to $199c = R1,99$.

Once they have mastered it, do the reverse: $R1,20 = 120c$ up to $R1,99 = 199c$.

It is imperative that the learners understand the **completion** and **solution of a ten** completely. This is an investment for the future. The more **concrete work** that is done here, the better the learners' understanding of these concepts. They must be able to **relate** what they are doing. If they cannot **say** how they arrived at an answer, it means that the concrete image has not been properly consolidated. Give them **many** and **regular exercises** of this kind.

Remember, if you prefer not to do solution directly after the completion, you are free to alter the sequence of the work sheets to suit yourself.

- Various triangles: the isosceles; equilateral and rectangular and any other types of triangle.
- Various rectangles and squares.

(iii) Protractors and rulers, enough for everyone in the group.

First establish what the learners already know about the **sides** and **angles** of triangles, rectangles and squares.

Measuring angles:

Explain what a **right angle** is (angle equal to 90°) if they do not know it. Show the learners the **protractor** and how to measure an angle with it. Make sure that they know exactly how to measure angles.

Let them measure the angles of the various forms on the mat. They must say what they have discovered about the **angles** of the triangles, rectangles and squares.

All the angles of the rectangles and the squares are **right angles**. Give them the opportunity to discover other **right angles** in the classroom.

Have they discovered that a triangle never has more than one right angle? A triangle with a right angle is called a **rectangular triangle**.

Measuring sides:

Give the learners rulers to measure the sides. Make very sure that all the learners know how to measure using a ruler.

They must discover their own:

There are triangles of which the 3 sides are of the same length. That is an equilateral triangle.

There are triangles of which 2 sides are the same length. That is an isosceles triangle.

There are triangles of which the sides are all different.

The 4 sides of a square are of equal length.

The 2 opposite sides of a rectangle are the same length.

This work will probably not all be done in one mat session, and the time needed will vary depending on the group involved. It is advisable to complete measuring angles in one session and measuring sides in another.

If the learners have already mastered halving of unequal numbers, it is only necessary to explain how to write $\frac{1}{2}$. That means 1 of the 2 parts into which it has been divided:

1	is numerator
2	is denominator

Table 1.47

This is about halving 3,5,7 or 9 **groups of ten**. There is always **1 ten** that must be solved. Encourage the learners to regroup before they halve. They must first do it concretely on the mat.

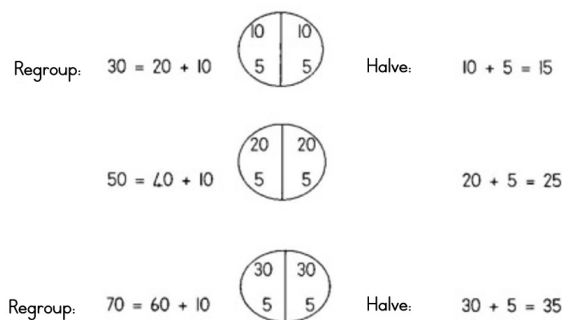


Figure 1.85

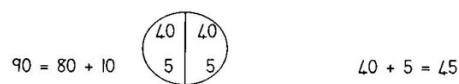


Figure 1.86

Every time the numbers 6 to 9 are doubled, a ten is completed.
The learners must indicate it on the work sheet by drawing a circle around the ten.

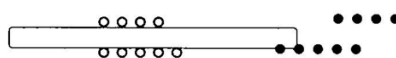


Figure 1.87

If there is no calculator available, the educator or one of the learners can write the answers on the blackboard after completing the work sheet. However, the learners who are able to do the calculations on their own, must be allowed to do it.

Encourage the learners to persevere until they find the right “path”. They may require an extra sheet of paper on which to write the numbers while trying to find the correct ones.⁷

1.11.5 LEARNER SECTION

1.11.6 Content

1.11.6.1 AACTIVITY: Grouping [LO 1.4, LO 1.7, LO 1.8, LO 1.9, LO 1.10, LO 3.1, LO 3.3]

Bonny and Tommy know how easy it is to work with numbers once they have been grouped into tens. Sometimes it is necessary to **regroup** some of **the tens** if one has to **subtract** and there are not enough units to take away.

- © Mary has 16 sweets and she wants to give Peter 9. How many will she have left?

Number sentence: $16 - 9 = \underline{\hspace{2cm}}$

$$\begin{array}{r} \textcircled{\circ}\textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \\ \textcircled{\circ}\textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \end{array} \bigg/ \begin{array}{r} \textcircled{\circ} \\ \textcircled{\circ}\textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \end{array}$$

Bonny did it this way:

$$\begin{aligned} 16 - 9 &= (10 - 9) + 6 \\ &= 1 + 6 \\ &= 7 \end{aligned}$$



She **regrouped the 10** and took away the **9** from the **10**. The **1** that was left from the **10**, was then added to the **6** of the **16**. Then **7** were left.

$$\begin{array}{r} \textcircled{\circ}\textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \\ \textcircled{\circ}\textcircled{\circ} \end{array} \bigg/ \begin{array}{r} \textcircled{\circ}\textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \\ \textcircled{\circ}\textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \end{array}$$

Tommy did it this way:

$$\begin{aligned} 16 - 9 &= (16 - 6) - 3 \\ &= 10 - 3 \\ &= 7 \end{aligned}$$



First of all he took away the **6** units from the **16**. Then there were **10** left. He then **regrouped the 10** so that he could take away the **3** that he needed to take away. Then **7** were left.

- © You can decide for yourself what you want to do if you have to **regroup a ten**.

Number sentence: $15 - 8 = \underline{\hspace{2cm}}$

$$\begin{array}{r} \textcircled{\circ}\textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \\ \textcircled{\circ}\textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \end{array} \quad \begin{array}{r} \textcircled{\circ}\textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \\ \textcircled{\circ}\textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \end{array}$$

Number sentence: $13 - 5 = \underline{\hspace{2cm}}$

$$\begin{array}{r} \textcircled{\circ}\textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \\ \textcircled{\circ}\textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \end{array} \quad \begin{array}{r} \textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \\ \textcircled{\circ}\textcircled{\circ}\textcircled{\circ} \end{array}$$

Figure 1.88

Mary has 16 sweets and she wants to give Peter 9. How many will she have left?

Tommy says we must do it without the dots now.

- Do the one that you understand **best**.

$$\begin{aligned} 14 - 9 &= 14 - 4 - 5 = \underline{\hspace{1cm}} \text{ of } 14 - 9 = (10 - 9) + 4 = \underline{\hspace{1cm}} \\ 13 - 8 &= 13 - 3 - 5 = \underline{\hspace{1cm}} \text{ of } 13 - 8 = (10 - 8) + 3 = \underline{\hspace{1cm}} \\ 12 - 6 &= 12 - 2 - 4 = \underline{\hspace{1cm}} \text{ of } 12 - 6 = (10 - 6) + 2 = \underline{\hspace{1cm}} \\ 5 - 7 &= 15 - 5 - 2 = \underline{\hspace{1cm}} \text{ of } 15 - 7 = (10 - 7) + 5 = \underline{\hspace{1cm}} \\ 18 - 9 &= 18 - 8 - 1 = \underline{\hspace{1cm}} \text{ of } 18 - 9 = (10 - 9) + 8 = \underline{\hspace{1cm}} \\ 11 - 5 &= 11 - 1 - 4 = \underline{\hspace{1cm}} \text{ of } 11 - 5 = (10 - 5) + 1 = \underline{\hspace{1cm}} \end{aligned}$$

- Complete:

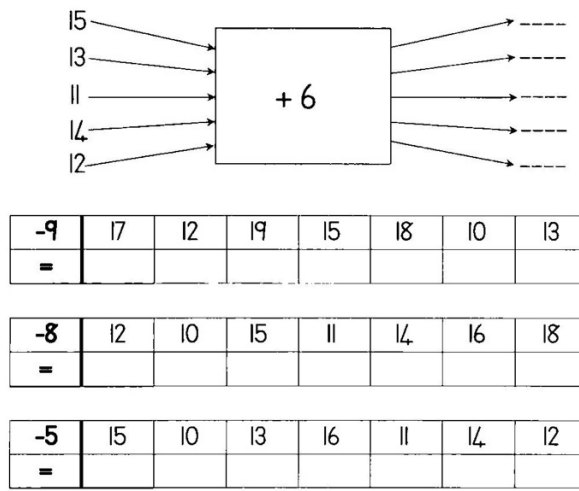


Figure 1.89

-
- Think!

$9 + 6 = \underline{\quad}$	$7 + 5 = \underline{\quad}$	$8 + 8 = \underline{\quad}$
$6 + 7 = \underline{\quad}$	$9 + 4 = \underline{\quad}$	$7 + 3 = \underline{\quad}$
$8 + 6 = \underline{\quad}$	$6 + 5 = \underline{\quad}$	$9 + 7 = \underline{\quad}$
$5 + 8 = \underline{\quad}$	$8 + 3 = \underline{\quad}$	$6 + 6 = \underline{\quad}$
$7 + 7 = \underline{\quad}$	$4 + 8 = \underline{\quad}$	$5 + 7 = \underline{\quad}$
$3 + 9 = \underline{\quad}$	$5 + 5 = \underline{\quad}$	$2 + 9 = \underline{\quad}$
$4 + 7 = \underline{\quad}$	$9 + 9 = \underline{\quad}$	$4 + 6 = \underline{\quad}$

$14 - 6 = \underline{\quad}$	$18 - 9 = \underline{\quad}$	$12 - 3 = \underline{\quad}$
$17 - 9 = \underline{\quad}$	$11 - 2 = \underline{\quad}$	$15 - 9 = \underline{\quad}$
$13 - 6 = \underline{\quad}$	$16 - 8 = \underline{\quad}$	$14 - 5 = \underline{\quad}$
$15 - 8 = \underline{\quad}$	$12 - 5 = \underline{\quad}$	$17 - 8 = \underline{\quad}$
$16 - 7 = \underline{\quad}$	$14 - 7 = \underline{\quad}$	$13 - 7 = \underline{\quad}$
$12 - 6 = \underline{\quad}$	$13 - 4 = \underline{\quad}$	$11 - 4 = \underline{\quad}$
$11 - 3 = \underline{\quad}$	$15 - 6 = \underline{\quad}$	$12 - 8 = \underline{\quad}$

We can make patterns again:

$9 + 4 = 13$	$8 + 7 = 15$	$7 + 5 = 12$
$19 + 4 = 23$	$18 + 7 = 25$	$17 + 5 = \underline{\quad}$
$29 + 4 = 33$	$28 + 7 = \underline{\quad}$	$27 + 5 = \underline{\quad}$
$39 + 4 = \underline{\quad}$	$38 + 7 = \underline{\quad}$	$37 + 5 = \underline{\quad}$
$49 + 4 = \underline{\quad}$	$48 + 7 = \underline{\quad}$	$47 + 5 = \underline{\quad}$

$4 + 8 = \underline{\quad}$	$6 + 4 = \underline{\quad}$	$5 + 7 = \underline{\quad}$
$84 + 8 = \underline{\quad}$	$56 + 4 = \underline{\quad}$	$65 + 7 = \underline{\quad}$
$94 + 8 = \underline{\quad}$	$96 + 4 = \underline{\quad}$	$95 + 7 = \underline{\quad}$

$15 - 9 = 6$	$12 - 7 = 5$	$13 - 5 = 8$
$25 - 9 = 16$	$22 - 7 = 15$	$23 - 5 = \underline{\quad}$
$35 - 9 = 26$	$32 - 7 = \underline{\quad}$	$33 - 5 = \underline{\quad}$
$45 - 9 = \underline{\quad}$	$42 - 7 = \underline{\quad}$	$43 - 5 = \underline{\quad}$
$55 - 9 = \underline{\quad}$	$52 - 7 = \underline{\quad}$	$53 - 5 = \underline{\quad}$

$16 - 7 = \underline{\quad}$	$11 - 4 = \underline{\quad}$	$14 - 6 = \underline{\quad}$
$66 - 7 = \underline{\quad}$	$81 - 4 = \underline{\quad}$	$94 - 6 = \underline{\quad}$
$106 - 7 = \underline{\quad}$	$101 - 4 = \underline{\quad}$	$104 - 6 = \underline{\quad}$

Figure 1.90

-
- Bonny and Tommy feel like doing their sums **vertically**.

$\begin{array}{r} 9 \\ + 5 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ + 4 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ + 6 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ + 4 \\ \hline \end{array}$
$\begin{array}{r} 16 \\ + 5 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ + 8 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ + 7 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ + 9 \\ \hline \end{array}$
$\begin{array}{r} 37 \\ + 7 \\ \hline \end{array}$	$\begin{array}{r} 46 \\ + 9 \\ \hline \end{array}$	$\begin{array}{r} 28 \\ + 3 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ + 5 \\ \hline \end{array}$
$\begin{array}{r} 15 \\ - 6 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ - 7 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ - 8 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ - 9 \\ \hline \end{array}$
$\begin{array}{r} 27 \\ - 8 \\ \hline \end{array}$	$\begin{array}{r} 23 \\ - 5 \\ \hline \end{array}$	$\begin{array}{r} 21 \\ - 3 \\ \hline \end{array}$	$\begin{array}{r} 27 \\ - 7 \\ \hline \end{array}$
$\begin{array}{r} 35 \\ - 6 \\ \hline \end{array}$	$\begin{array}{r} 42 \\ - 4 \\ \hline \end{array}$	$\begin{array}{r} 54 \\ - 9 \\ \hline \end{array}$	$\begin{array}{r} 96 \\ - 7 \\ \hline \end{array}$

Figure 1.91

-
- The number in the top circle is found every time by adding together the numbers of the 2 circles below it, to which it is connected. Complete the number wall now.

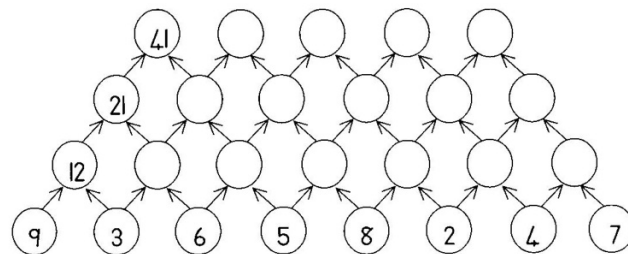


Figure 1.92

```

101 * * * * * 110
111 * * * * * 120
121 * * * * * 130
131 * * * * * 140
141 * * * * * 150

```

151 * * * * * 160
 161 * * * * * 170
 171 * * * * * 180
 181 * * * * * 190
 191 * * * * * 200

- Do the calculations below. Mark the answers in the block above. Join the numbers with a straight line, in the sequence in which you do the calculations.

- $150 + 1 =$ _____
- $160 - 1 =$ _____
- $111 + 4 =$ _____
- $155 - 4 =$ _____
- $180 + 10 + 1 =$ _____
- $190 + 5 + 4 =$ _____
- $160 - 5 + 4 =$ _____

What do you see? _____ How many **shapes** do you see? _____

Name them. _____

Draw a line that will **halve** the shapes. Colour in **half** of every shape.

How many shapes do you see now?

Name them. _____

How many **sides** are there to a:

a triangle _____, a square _____ and a rectangle _____ ?

How many **angles** are there to a:

a triangle _____, a square _____ and a rectangle _____ ?

Below is an illustration of the box in which **Bonny and Tommy's** pencils were packed. They wanted to know what shapes were used in making this box, so they opened it up like this.

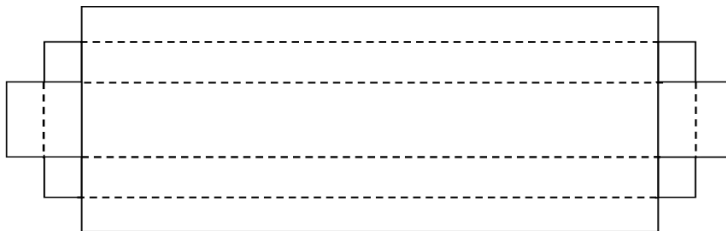


Figure 1.93

- Which shapes do you recognise, and how many of them are there?

- Now each of you must bring a box (not too big) to school. Open it up and draw it on the other side of this worksheet. You can paste the box there later.
- Write down **which shapes** and **how many** were used.

- Use your ruler and measure the sides of each shape. Write it on our drawing. If you don't know how to measure with a ruler, you can ask your educator or a friend to help you.
- What do you know about the **sides** of a **square** and a **rectangle**?

The sides of a square _____
 The sides of a rectangle _____

- What do you know about the **angles** of a **square** and a **rectangle**?

-
- **Design** and **make** your own container in which you can put some sweets. If you don't have cardboard, use the inside of some other big, empty container.

Today **Bonny** and **Tommy** got only **half** an apple each. Their mother had only 1 apple, but she divided it very carefully so that both parts were **exactly the same size**. She **halved** it.



Figure 1.94

- We say: **Bonny** got one half, and **Tommy** got the other half.

There is a shorter way of writing one half: $\frac{1}{2}$



Remember: 2 halves equals 1 whole $\frac{1}{2} + \frac{1}{2} = 1 \text{ whole}$

We can also halve numbers: $\text{OO}|\bullet\bullet$ Half of 4 is 2

We write it like this: $\frac{1}{2}$ of 4 is 2 or $\frac{1}{2} \times 4 = 2$

We can also halve **uneven numbers**: $\text{O}|\bullet\bullet$ Half of 3 is $1\frac{1}{2}$

$\frac{1}{2}$ of 3 is $1\frac{1}{2}$ or $\frac{1}{2} \times 3 = 1\frac{1}{2}$

⊕ Halve:

(Colour half of each number.)

ooooo	Half of 5 is	_____ .	$\frac{1}{2} \times 5 =$	_____
oooooooo	Half of 7 is	_____ .	$\frac{1}{2} \times 7 =$	_____
oooooooooooo	Half of 9 is	_____ .	$\frac{1}{2} \times 9 =$	_____
oooooooooooooo	Half of 11 is	_____ .	$\frac{1}{2} \times 11 =$	_____

Figure 1.95

- Mother gave **Bonny and Tommy** 15 cookies to share between them. Draw the cookies in their lunch boxes.
- How many cookies did each one get?

Each one got _____.

Solve the problems in the way you prefer. You may draw them.

- **Tommy** buys 13 bananas and gives half to **Bonny**. How many bananas did each one get?

Each one got _____.

- **Bonny** has a ribbon that is 29cm long. She wants to cut it in half to make 2 ribbons of the same length. How long will each ribbon be?

Each ribbon will be _____.

- **Tommy** has to drink 17 glasses of water in 2 days. How many glasses of water must he drink on 1 day if he drinks the same amount of water each day?

He must drink _____ each day.

- Mother bought 25 litres of fruit juice for a party, but the children drank only half of it. How many litres were left over?

There were _____.

- **Who wants to try this?** (You may draw if you like.)

$$\begin{aligned} 3\frac{1}{2} + 3\frac{1}{2} &= \text{-----} \\ 5\frac{1}{2} + 5\frac{1}{2} &= \text{-----} \\ 10\frac{1}{2} + \frac{1}{2} &= \text{-----} \\ 12 + 2\frac{1}{2} &= \text{-----} \end{aligned}$$

1.11.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:

1.1.1 the intervals specified in grade 2 with increased number ranges;

Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents;

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;

1.10.2 doubling and halving;

1.10.3 number-lines;

1.10.4 rounding off in tens

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

Assessment Standard 3.1: We know this when the learner recognises, identifies and names two-dimensional shapes and three-dimensional objects in the environment and in pictures;

Assessment Standard 3.3: We know this when the learner observes and creates given and described two-dimensional shapes and three-dimensional objects using concrete materials (e.g. building blocks, construction sets, cut-out two-dimensional shapes, clay, drinking straws).

1.12 Halving and Doubling¹²

1.12.1 MATHEMATICS

1.12.2 Bonny and Tommy take a look at the seasons

1.12.3 EDUCATOR SECTION

1.12.4 Memorandum

This module still consists mostly of activities for consolidation, reinforcement and assessment of the work taught in the previous grades focusing on the number 100.

- **Number concept** to 200.
- **Operations:** - Consolidates all work covered in Grade 1 en 2.

¹²This content is available online at <<http://cnx.org/content/m32022/1.1/>>.

The names of the months and the correct spelling thereof need to be attended to. Discussions about the seasons and a healthy environment (nature conservation) will provide opportunities for the integration with other learning areas.

Weather charts for the different seasons can be recorded e.g. February – summer; May – autumn; August – winter; November – spring. These are not the best months for the seasons but they are the months in which the learners attend school for the whole month. Complete a bar graph for every weather chart so that weather conditions can be compared and discussed. Having completed all the bar graphs these can be compared to one another and the learners can discover weather conditions relevant to their own regions as well as those relevant to each season. The educator can keep the graphs to compare the statistics with the next year's graphs.

The tasks and activities in Learning Unit 2 are still mainly intended for consolidation of work covered in previous grades. It is essential, however, that educators continue to make use of concrete apparatus to repeat, explain and consolidate all concepts that were not fully mastered before.

It is of the utmost importance that learners must be totally familiar with the tens grouping of our numbers system:

10 ones are grouped as **1 group of ten**

10 tens are grouped as **1 group of a hundred**

10 groups of a hundred are grouped as **1 group of a thousand**, etc.

Learners must work with counters that have been grouped in **hundreds, tens** and **units**. Should counters not be available, the following semi-concrete apparatus can be used.

Learners must work with counters that have been grouped in **hundreds, tens** and **units**. Should counters not be available, the following semi-concrete apparatus can be used.

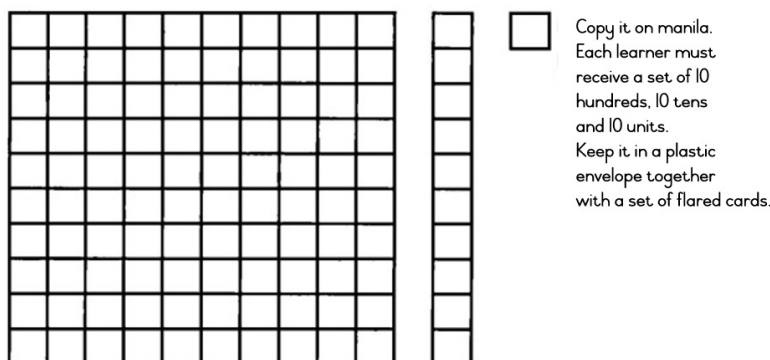


Figure 1.96

The expansion cards (flared cards) are very useful in explaining **place values, renaming, unifying of numbers** and the **0 as place-keeper**.

Attached you will find an example of expansion cards (flared cards) and a key to writing all number names. Flared cards enable learners to build any number, and if learners know the basic number names, they can construct and write any number name from the given parts. Give each learner a copy to use, for example

Example:

Number name: one thousand one hundred and thirty seven

Number: | 137

1000

100

30

7

1	2	3	4	5	6	7	8	9
10	20	30	40	50				
60	70	80	90					
100	200	300						
400	500	600						
700	800	900						
1000	2000							
4000	5000							
6000	7000							
8000	9000							

Figure 1.97

If you wish to use this example, enlarge it and copy it on manilla.

0 nought 1 one 2 two 3 three 4 four 5 five 6 six 7 seven 8 eight 9 nine 10 ten 11 eleven 12 twelve 13 thirteen 14 fourteen 15 fifteen 16 sixteen 17 seventeen 18 eighteen 19 nineteen	20 twenty 21 twenty one 22 twenty two 23 twenty three 24 twenty four 25 twenty five 26 twenty six 27 twenty seven 28 twenty eight 29 twenty nine
continued on next page	

10 ten20 twenty30 thirty40 forty50 fifty60 sixty70 seventy80 eighty90 ninety		
100 one hundred 200 two hundred 300 three hundred 400 four hundred 500 five hundred 600 six hundred 700 seven hundred 800 eight hundred 900 nine hundred	101 one hundred and one102 one hundred and two103 one hundred and three104 one hundred and four105 one hundred and five106 one hundred and six107 one hundred and seven108 one hundred and eight109 one hundred and nine	
1 000 one thousand 3 000 three thousand 5 000 five thousand 7 000 seven thousand 9 000 nine thousand	2 000 two thousand4 000 four thousand6 000 six thousand8 000 eight thousand10 000 ten thousand	
	111 one hundred and eleven112 one hundred and twelve113 one hundred and thirteen114 one hundred and fourteen115 one hundred and fifteen116 one hundred and sixteen117 one hundred and seventeen118 one hundred and eighteen119 one hundred and nineteen120 one hundred and twenty121 one hundred and twenty one122 one hundred and twenty two123 one hundred and twenty three124 one hundred and twenty four125 one hundred and twenty five126 one hundred and twenty six127 one hundred and twenty seven128 one hundred and twenty eight129 one hundred and twenty nine	
	110 one hundred and ten120 one hundred and twenty130 one hundred and thirty140 one hundred and forty150 one hundred and fifty160 one hundred and sixty170 one hundred and seventy180 one hundred and eighty190 one hundred and ninety	

Table 1.48

Frontpage.

It is essential to have an initial discussion on the changing of the seasons. Some learners may find it very stimulating to discover what causes seasons and why there are different seasons in the year.

Learners must complete the pictures by adding their own drawings to illustrate the typical seasonal qualities, e.g.:

Spring: flowers and blossoms; 2. Summer: anything to do with the seaside or the swimming pool; 3. Autumn: leaves in autumn colours on trees and the ground; 4. Winter: snow on the mountains or rain (where applicable), and leafless trees. Discuss it with the learners.

Learners are now expected to know the names of the seasons in the correct order, and to write them down. A “year and seasons clock” can be put up in the classroom, which can help the learners to master writing the names.

Explain the origin of the extra day every 4 years to the learners. Some of the learners may understand it at this stage, but it cannot be expected of them at all.

This work sheet may elicit a discussion on the Olympic games.

It is important that the learners must understand that if 1 is added to the 9 units of 99, there is another group of ten. There are now 10 groups of ten altogether, which are grouped together to make 1 group of a hundred.

Likewise, they must understand that if they want to take away units from a hundred, they first have to dissolve the group of one hundred, and then dissolve 1 group of ten, before they will have units to take away.

The 0 as place-keeper might cause problems for some learners, Therefore it is essential that the learners must use counters that are grouped in hundreds, tens and units (or the copied blocks), as well as the flared cards, when this work is being done. If necessary, provide similar activities.

If the learners find it difficult to master place values, lay out the numbers with the flared cards.

On the next page there is an example of the multiples chart. It can be utilised very effectively, therefore it is suggested that each learner is given a copy.

This example has been done further than the one on the work sheet, but it can be used for the whole year. Besides, there are learners who are able and keen to count in 6,7,8 and 9.

Show the learners how to find the answers to the tables, x and + from the chart.

Example: $2 \times 4 = 8$ Go right from 2 and above from 4 downwards – meet at 8 (see arrows)

$15 \div 3 = 5$ Go left from 15 to 3 and up from 15 - 5th multiple

Multiples: Count up to the 10th multiple and back.

Count in:

	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30

Count up to the 10th multiple and back.

Count in: ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

Figure 1.98

At this stage the learners must know that $100c = R1$. The learners now have a good concept of 100 and will realise that $120c$ equal R1 plus 20c, thus they can now learn to write it correctly, namely $120c = R1,20$. Master it up to $199c = R1,99$.

Once they have mastered it, do the reverse: $R1,20 = 120c$ up to $R1,99 = 199c$.

It is imperative that the learners understand the **completion** and **solution of a ten** completely. This is an investment for the future. The more **concrete work** that is done here, the better the learners' understanding of these concepts. They must be able to **relate** what they are doing. If they cannot **say** how they arrived at an answer, it means that the concrete image has not been properly consolidated. Give them **many** and **regular exercises** of this kind.

Remember, if you prefer not to do solution directly after the completion, you are free to alter the sequence of the work sheets to suit yourself.

(i) Various triangles: the isosceles; equilateral and rectangular and any other types of triangle.

(ii) Various rectangles and squares.

(iii) Protractors and rulers, enough for everyone in the group.

First establish what the learners already know about the **sides** and **angles** of triangles, rectangles and squares.

Measuring angles:

Explain what a **right angle** is (angle equal to 90°) if they do not know it. Show the learners the **protractor** and how to measure an angle with it. Make sure that they know exactly how to measure angles.

Let them measure the angles of the various forms on the mat. They must say what they have discovered about the **angles** of the triangles, rectangles and squares.

All the angles of the rectangles and the squares are **right angles**. Give them the opportunity to discover other **right angles** in the classroom.

Have they discovered that a triangle never has more than one right angle? A triangle with a right angle is called a **rectangular triangle**.

Measuring sides:

Give the learners rulers to measure the sides. Make very sure that all the learners know how to measure using a ruler.

They must discover their own:

There are triangles of which the 3 sides are of the same length. That is an equilateral triangle.

There are triangles of which 2 sides are the same length. That is an isosceles triangle.

There are triangles of which the sides are all different.

The 4 sides of a square are of equal length.

The 2 opposite sides of a rectangle are the same length.

This work will probably not all be done in one mat session, and the time needed will vary depending on the group involved. It is advisable to complete measuring angles in one session and measuring sides in another.

If the learners have already mastered halving of unequal numbers, it is only necessary to explain how to write $\frac{1}{2}$ That means 1 of the 2 parts into which it has been divided:

1	is numerator
2	is denominator

Table 1.49

This is about halving 3,5,7 or 9 **groups of ten**. There is always **1 ten** that must be solved. Encourage the learners to regroup before they halve. They must first do it concretely on the mat.

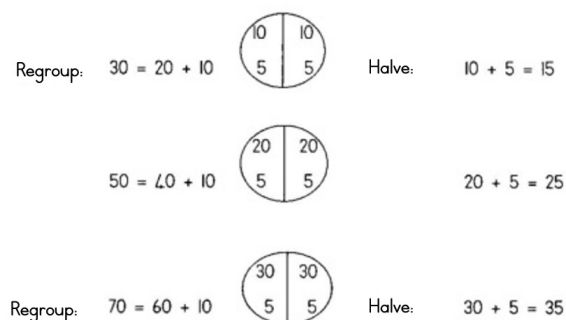


Figure 1.99

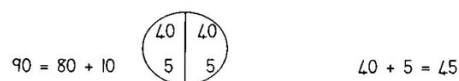


Figure 1.100

Every time the numbers 6 to 9 are doubled, a ten is completed.
The learners must indicate it on the work sheet by drawing a circle around the ten.

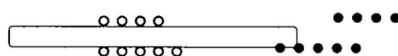


Figure 1.101

If there is no calculator available, the educator or one of the learners can write the answers on the blackboard after completing the work sheet. However, the learners who are able to do the calculations on their own, must be allowed to do it.


Encourage the learners to persevere until they find the right “path”. They may require an extra sheet of paper on which to write the numbers while trying to find the correct ones.⁷

1.12.5 LEARNER SECTION

1.12.6 Content

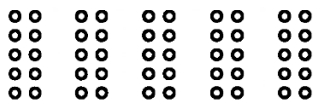
1.12.6.1 ACTIVITY: Halving and Doubling [LO 1.8, LO 1.9, LO 1.10]

- Here are 30 smarties. Show me how you are going to divide them between **Bonny** and **Tommy**. Make **Bonny's** smarties **red** and **Tommy's** **green**.

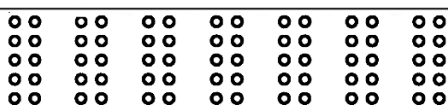


☺ There are **3** tens, so you must **regroup 1 ten** when you **halve**.
 Half of 30 is _____. $\frac{1}{2} \times 30 = \underline{\hspace{2cm}}$ $30 \div 2 = \underline{\hspace{2cm}}$

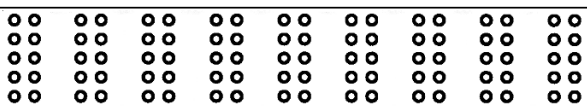
☺ **Halve:** Colour one half blue, and the other half orange.



Half of 50 is _____. $\frac{1}{2} \times 50 = \underline{\hspace{2cm}}$ $50 \div 2 = \underline{\hspace{2cm}}$



Half of 70 is _____. $\frac{1}{2} \times 70 = \underline{\hspace{2cm}}$ $70 \div 2 = \underline{\hspace{2cm}}$



Half of 90 is _____. $\frac{1}{2} \times 90 = \underline{\hspace{2cm}}$ $90 \div 2 = \underline{\hspace{2cm}}$

☺ **Halve:**

36 : _____	58 : _____	72 : _____
94 : _____	32 : _____	55 : _____

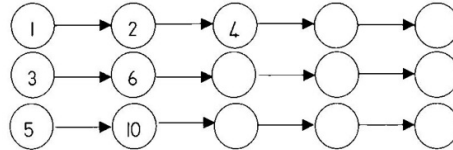
Figure 1.102

Bonny and Tommy say they are going to try very hard to **double** their pocket money. That means that they will also have to do **double** the number of jobs.

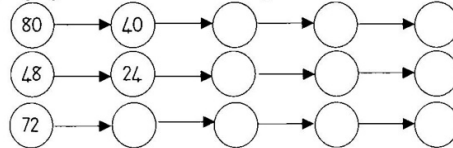
- You will remember that **Bonny** earned **R2** and **Tommy** **R2,20**. Calculate how much each will get if it is doubled.

Bonny will get R_____ and **Tommy** will get R_____.

Tommy says you will have to **double** if you want to follow and complete his patterns.



Bonny says you will have to **halve** if you want to follow and complete her patterns.



Make each number **12 more**:

20 : ____ 35 : ____ 48 : ____ 89 : ____
110 : ____ 144 : ____ 168 : ____ 179 : ____

Make each number **10 less**:

60 : ____ 39 : ____ 45 : ____ 99 : ____
180 : ____ 147 : ____ 111 : ____ 200 : ____

Round off to the **nearest ten**:

23 : ____ 47 : ____ 35 : ____ 99 : ____
144 : ____ 155 : ____ 111 : ____ 189 : ____

Estimate the answer by making use of rounding off:

	Rounding off	Estimation	Calculator
26 + 51			
45 + 39			
84 - 23			
98 - 43			

Who can help **Bonny and Tommy** to do this sum?

(Clue: Use the number values of the letters that have been given.)

If **a** = 6 and **b** = 10 calculate the value of **c**.

$a \times b = c$ _____ $c =$ _____

Figure 1.103

Bonny and Tommy know there is a treasure in the cottage across the river, but they do not know how to get there. Can you help them?

Here is a clue .

As you walk, add together the numbers on the stones. If you get **200** when you add the **8** on the stone directly in front of the cottage, you have found the right way. Be careful, because there are stones on which you must not step. **Now draw the route that you have taken on the picture.**

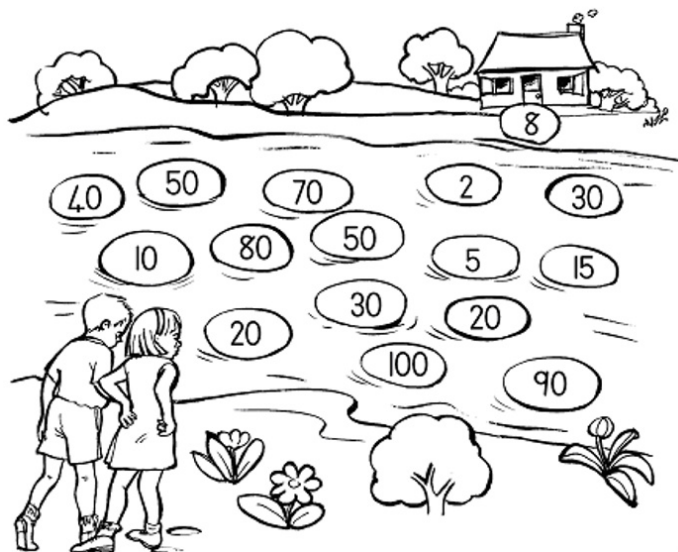


Figure 1.104

- Write down the value of all the stones that you have used to cross the river. Add them.

1.12.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

- 1.10.1 building up and breaking down numbers;
- 1.10.2 doubling and halving;
- 1.10.3 number-lines;
- 1.10.4 rounding off in tens.

Chapter 2

Term 2

2.1 Numbers¹

2.1.1 MATHEMATICS

2.1.2 Bonny and Tommy's birthday party

2.1.3 EDUCATOR SECTION

2.1.4 Memorandum

- More advanced work is covered, but the educator will benefit greatly if pages (completing the calendar) are done with all the learners simultaneously. Groups 2 and 3 can then afterwards continue with the work with which they are busy.
- Number Concept to 400
- Operations:
- Addition – two digit numbers with two digit numbers, using regrouping of a ten.
- Subtraction – two digit numbers from two digit numbers, using regrouping of a ten.
- Multiplication – $2x$, $4x$, $5x$ and $10x$ to the 10th multiple (tables).
- Division - $\div 2$, $\div 4$, $\div 5$ and $\div 10$ to the 10th multiple (tables).

Integrate the design of the hat and the gift wrap with Technology. This can be done classically.

All the calculations involving money and other quantities which the learners work with will enable them to realise that Mathematics is part of our daily activities.

From Module 3 onwards the learners will gradually progress to the more advanced work of Grade 3. It may be necessary sometimes to go back to previous work to expedite the transition to the advanced work.

It is important that the learners should realise that addition and subtraction combinations as well as the tables, multiplication and division, simply have to be repeated regularly and must be learnt until they know it! It is basic work that cannot be neglected.

Attached you will find a sheet with tables presented in a specific order. You can copy it and give it to the learners so that they can keep it with them.

These worksheets can be presented to the whole class at the same time. Learners must write the dates on the calendar on their own, therefore it is of the utmost importance that you will make quite sure that all the learners begin on the correct day in January. I suggest that you fill in 1 January yourself before copying the worksheet. If you like, you could even fill it in further, depending on the competence of the learners.

It is important for the learners to understand the difference between days of the week (7) and workdays, school days or week days (5), otherwise they may make numerous errors in their calculations.

¹This content is available online at <<http://cnx.org/content/m32452/1.1/>>.

The learners must be aware of the patterns that are used in completing tables, therefore they must identify the pattern initially before they try to complete the table.

This is a vertical numbers line. The negative numbers have been filled in so that the learner will realise that numbers smaller than 0 do exist. It is not necessary to give this aspect much attention at this stage. It can just be mentioned in passing, to satisfy the learners who are keen to know more.

Explain to the learners that they are seeing diagrams, and that each symbol represents the value of the place where it stands.

Regrouping the 10 is being done now. The learners must first lay it out on the mat, so that it is experienced as something concrete, and so that they can see that there are 12 units and that they can therefore make another ten. This ten is then grouped with the other tens.

It depends on the educator and the abilities of the learners whether they are going to use carried numbers when doing the vertical calculations

The breaking up of the ten is also learnt now. Learners must work with this on the mat in order to experience in concrete terms that there are not enough units and that a ten must be regrouped in order to get enough units. They must understand the breaking up (regrouping) of the ten very well before they can do it in writing.

Again it depends on the educator and the abilities of the learners whether they are going to make use of carried numbers in vertical calculations.

$2 \times 0 = 02 \times 1 =$ $22 \times 2 = 42 \times 3 =$ $62 \times 4 = 82 \times 5 =$ $102 \times 6 = 122 \times 7$ $= 142 \times 8 = 162 \times$ $9 = 182 \times 10 = 20$	$4 \times 0 = 04 \times 1 =$ $44 \times 2 = 84 \times 3 =$ $124 \times 4 = 164 \times 5$ $= 204 \times 6 = 244 \times$ $7 = 284 \times 8 = 324$ $\times 9 = 364 \times 10 =$ 40		$0 \div 2 = 02 \div 2 =$ $14 \div 2 = 26 \div 2 =$ $38 \div 2 = 410 \div 2$ $= 512 \div 2 = 614 \div$ $2 = 716 \div 2 = 818$ $\div 2 = 920 \div 2 =$ 10	$0 \div 4 = 04 \div 4 =$ $18 \div 4 = 212 \div 4$ $= 316 \div 4 = 420 \div$ $4 = 524 \div 4 = 628$ $\div 4 = 732 \div 4 =$ $836 \div 4 = 940 \div 4$ $= 10$
$5 \times 0 = 05 \times 1 =$ $55 \times 2 = 105 \times 3 =$ $155 \times 4 = 205 \times 5$ $= 255 \times 6 = 305 \times$ $7 = 355 \times 8 = 405$ $\times 9 = 455 \times 10 =$ 50	$10 \times 0 = 010 \times 1$ $= 1010 \times 2 = 2010$ $\times 3 = 3010 \times 4 =$ $4010 \times 5 = 5010$ $\times 6 = 6010 \times 7 =$ $7010 \times 8 = 8010 \times$ $9 = 9010 \times 10 =$ 100		$0 \div 5 = 05 \div 5 =$ $110 \div 5 = 215 \div 5$ $= 320 \div 5 = 425 \div$ $5 = 530 \div 5 = 635$ $\div 5 = 740 \div 5 =$ $845 \div 5 = 950 \div 5$ $= 10$	$0 \div 10 = 010 \div 10$ $= 120 \div 10 = 230$ $\div 10 = 340 \div 10$ $= 450 \div 10 = 560$ $\div 10 = 670 \div 10 =$ $780 \div 10 = 890 \div$ $10 = 9100 \div 10 =$ 10
<i>continued on next page</i>				

$3 \times 0 = 03 \times 1 =$	$6 \times 0 = 06 \times 1 =$		$0 \div 3 = 03 \div 3 =$	$0 \div 6 = 06 \div 6 =$
$33 \times 2 = 63 \times 3 =$	$66 \times 2 = 126 \times 3 =$		$16 \div 3 = 29 \div 3 =$	$112 \div 6 = 218 \div 6$
$93 \times 4 = 123 \times 5 =$	$186 \times 4 = 246 \times 5$		$312 \div 3 = 415 \div 3$	$= 324 \div 6 = 430 \div$
$153 \times 6 = 183 \times 7$	$= 306 \times 6 = 366 \times$		$= 518 \div 3 = 621 \div$	$6 = 536 \div 6 = 642$
$= 213 \times 8 = 243 \times$	$7 = 426 \times 8 = 486$		$3 = 724 \div 3 = 827$	$\div 6 = 748 \div 6 =$
$9 = 273 \times 10 = 30$	$\times 9 = 546 \times 10 =$		$\div 3 = 930 \div 3 =$	$854 \div 6 = 960 \div 6$
	60		10	$= 10$

Table 2.1

The important fact here is the equivalence of different coins. There are learners who will indicate 7c as 4c and 3c in coins, and who will not realise that such coins do not exist in our currency.

It is also the ideal opportunity for learners to learn $5 \times$ and \div if they have not yet done so.

Point out to the learners that in calculations the R and c are left out, but that they must be inserted in the completed number sentence (answers).

Encourage the learners to keep on drawing what they read and then to write the number sentence in order to solve the problem.

Make very sure that all the learners know that there will be 10 children at the party. (8 + Bonny + Tommy) If this information is incorrect, all the following calculations will be extremely difficult.

Designing and making the party hat can be done as part of Technology.

Demonstrate and discuss the 3 ways in which to draw a circle.

Do a great deal of practical work.

Make sure that they understand and know what the centre, diameter and radius of a circle is, and that $2 \times \text{radius} = \text{diameter}$. Explain to the learners what the circumference of the circle is.

The learners must indicate all points with letters right from the beginning. Show them that it makes it much easier to discuss and explain various aspects of the construction. They must understand that they may use any letter, as long as the same letter is not used twice in the same construction.

Once more discuss the different ways in which to divide squares and rectangles into halves and quarters.

Much concrete and semi-concrete work must be done when the learners have to divide numbers into quarters, especially when the number is not a multiple of 4. Use objects such as fruit and soft sweets that can actually be broken up quite easily, and not hard objects such as marbles, stones or bottle caps.

Explain to the learners that it will depend on the problem whether you can break it up into fractions or not.

Look at this: Daddy has 25 sheep that have to be herded into 4 pens. How many sheep will there be in each pen? (The remaining sheep cannot be cut up.)

Daddy has slaughtered 25 sheep and takes them to 4 butcheries. How many does each butchery get? (It will certainly be possible to divide the remaining sheep into 4.) Discuss more similar examples.

As soon as the learners understand that $4 \times$ is 2 times doubled, and $4 \div$ is two times halved, this can be drilled, because they must know the tables.

This is a wonderful way of familiarising learners with posing problems, but it demands much and regular practice. As soon as they understand it and can do it with confidence, they put forward wonderful ideas.

Begin with a very simple number sentence, e.g. $3 + 4 = \square$. Initially, let the learners name objects with which they can possibly work, and write these suggestions on the blackboard: trees, flowers, sweets, sheep, dogs, etc.

Everyone must be involved and try to give suggestions. Make the rows compete and then let them pose the problems as a kind of competition.

The vertical addition and subtraction calculations have been graded from simple to difficult so that it will be easy for you to determine a learner's problem(s). This will enable you to concentrate on the problem areas only and to give appropriate similar exercises to help them.

With the last row of addition calculations, completing the hundred (carrying over the tens) is done incidentally to determine which of the learners understand this already. However, you are free to facilitate this formally now.

It must be a pattern that is repeated every 2 blocks and therefore it must be exactly the same throughout. It can also be offered with Technology, and the learners can then draw their own blocks on a larger sheet of paper.

Explain rounding off to the nearest R to the learners. Let them bring old catalogues and practise rounding off until they understand it.

This worksheet will give you a good idea of which learners are able to follow and carry out instructions.

Any learner who has a good grasp of hundreds, tens and units at this stage, should be capable of completing this worksheet quite easily. Point out to the learners that if they do not get the same answer in the balloon vertically and horizontally, there is a mistake somewhere and they will have to check the answers vertically and horizontally again.

More examples with smaller numbers can also be given.

241620	301026	502948	1045594
60	66	127	253

Table 2.2

2.1.5 LEARNER SECTION

2.1.6 Content

2.1.6.1 ACTIVITY: Numbers [LO 1.1, LO 1.3, LO 1.4, LO 1.5, LO 1.8, LO 1.10, LO 4.2, LO 4.3, LO 5.1]

- It is Bonny and Tommy's birthday on 13 May. They want to know how many days are still left before their birthday.
- Complete the calendar. Use the calendar in the classroom or at home and make very sure that you start on the correct day in January.

- Do you know the names of the days of the week in the proper order, and can you write them correctly?

Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday

- Complete:

1. There are _____ days in a week.
2. There are _____ school days (week days or work days) in a week.
3. The first day of the week is _____
4. The last day of the week is _____
5. Together these two days are called a _____

- Make a * next to the day/days on which you do it:

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Sport	_____	_____	_____	_____	_____	_____	_____
Homework	_____	_____	_____	_____	_____	_____	_____
Play	_____	_____	_____	_____	_____	_____	_____
Watch T.V.	_____	_____	_____	_____	_____	_____	_____
Go to church	_____	_____	_____	_____	_____	_____	_____

Table 2.3

- What do you do most in a week? _____
- Which day is your busiest day? _____
- Use your calendar again to fill in the day and the date:

Today it is _____.

Yesterday it was _____.

This term the school will close on _____.

This year Christmas will be on _____.

- Count on the calendar:

In January this year there are _____ Fridays.

In the whole year there are _____ Sundays.

Die jaar het _____ dae.

Is it a leap year this year? _____

How do you know? _____

- Solve the problems, using your own method, but show how you did it.

1. We visited our grandmother and grandfather on the farm for 3 weeks. How many days did we spend there altogether?

We were there for _____

2. Mary was in bed with chicken pox for 2 weeks. How many school days did she miss?

She missed _____.

3. My father drives 6 km to work every day. How many km does he drive in 1 week if he goes to work every workday?

He drives _____

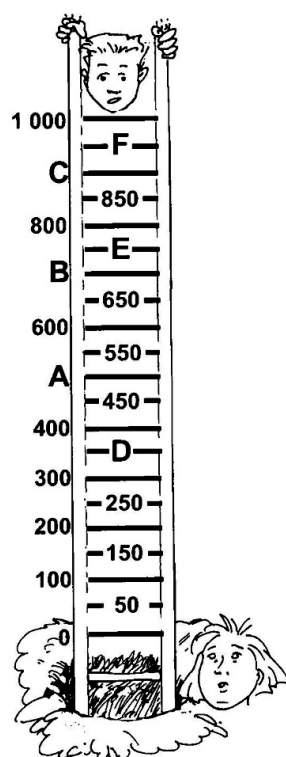
4. Bonny and Tommy play with their puppy every day of the weekend for 1 hour. How many hours have they played with him after 5 weeks?

They played _____

Complete:	week 1	2	3	4	5	6	7	8	9	10
	school days									

Table 2.4

- Bonny and Tommy can climb up the number ladder as far as 1 000 or down as far as -100.



1. Which numbers have been left out?

A is _____ B is _____

C is _____ D is _____

E is _____ F is _____

2. Draw the rungs on the ladder for the following numbers: (Estimate where it will be.)

30 125 240 290 360

LO 1.10

3. Draw a circle around all the numbers that come between 200 and 300 and then arrange them from the **least** to the **most**.

75 210 420 190 340 299
233 170 265 302 203 350

LO 1.4

4. Now write the **number names** of these numbers.

.....

.....

.....

.....

.....

Figure 2.3

- Count forwards in hundreds, and then back again:

100 200 _____ 1 000
 1 000 900 _____ 100

- Sometimes Bonny and Tommy use diagrams to represent numbers.

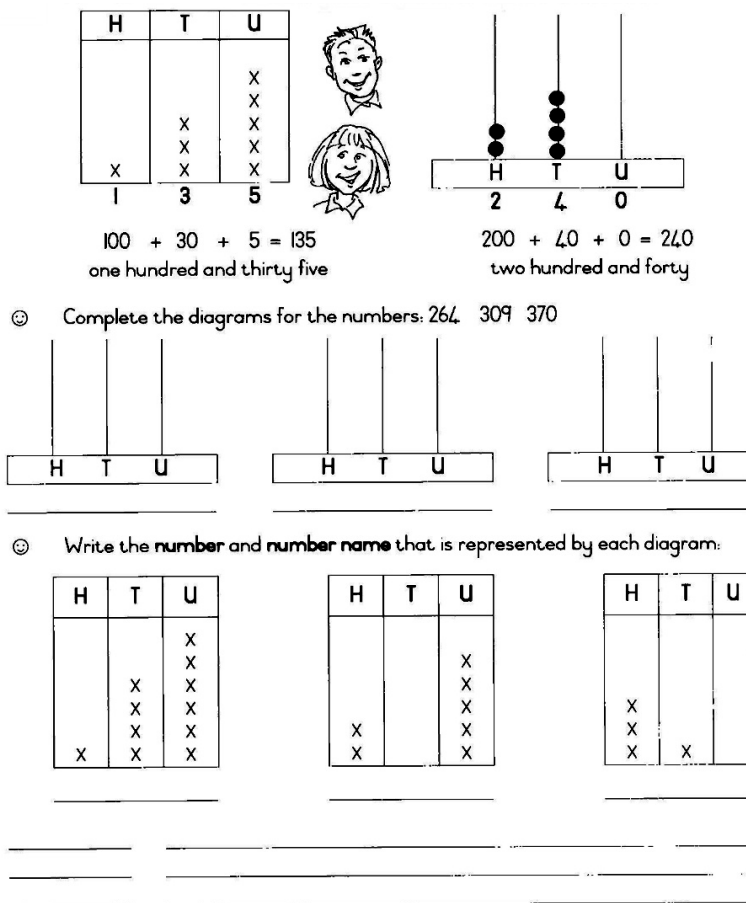


Figure 2.4

- What will happen if you add another hundred to each one of these numbers?

_____ + 100 = _____ + 100 = _____ + 100 = _____

- Bonny and Tommy have hidden a number sentence among the numbers in this block.
- Find all the numbers between 300 and 400 and colour the squares with an ordinary pencil.

200	315	178	612	144	447	162	333	554	128	419	304	109
155	301	290	422	515	167	298	303	818	422	191	320	715
524	321	188	661	176	325	327	329	336	340	222	348	199
432	350	569	351	208	184	529	357	177	282	555	363	999
191	362	365	369	370	171	284	375	286	612	444	377	813
946	914	755	384	123	456	678	789	800	876	753	531	179

Table 2.5

1. Have you found it? Write it down and complete it: _____

2. Now add two noughts to each number and write the new number sentence.

3. Find all the numbers in the block with 2 hundreds and write them down here:

4. Arrange them from the most to the least:

5. Fill in the missing numbers:

205	206	207	_____	_____	_____	_____	_____	_____	_____	_____	_____	214
221	223	225	_____	_____	_____	_____	_____	_____	_____	_____	_____	239
230	235	240	_____	_____	_____	_____	_____	_____	_____	_____	_____	275
203	213	223	_____	_____	_____	_____	_____	_____	_____	_____	_____	293
275	274	273	_____	_____	_____	_____	_____	_____	_____	_____	_____	266
258	256	254	_____	_____	_____	_____	_____	_____	_____	_____	_____	240
265	260	255	_____	_____	_____	_____	_____	_____	_____	_____	_____	220
297	287	277	_____	_____	_____	_____	_____	_____	_____	_____	_____	207

- See how Bonny and Tommy have solved their problem.
- Bonny has 25 sweets and Tommy has 17. How many sweets do they have altogether?

- See how Bonny and Tommy have solved their problem.
- Bonny has 25 sweets and Tommy has 17. How many sweets do they have altogether?

☺ If they put them all together, they can make another ten with the units.
Bonny's calculation looks like this:
 Number sentence: $25 + 17 = \square$
 $20 + 10 = 30$
 $5 + 7 = 12$
 $25 + 17 = 42$

☺ They have 42 sweets altogether.

☺ **Tommy** did his like this:
 Number sentence: $25 + 17 = \square$

25	
+ 17	
12	(5 + 7)
+ 30	(20 + 10)
42	

} Later on this step is left out.

☺ They have 42 sweets altogether.

☺ Use **Bonny's** or **Tommy's** method to do the calculations:
 $39 + 14 = \square$ $27 + 23 = \square$ $18 + 56 = \square$

Figure 2.5

- Here is a calculation that could cause problems.
- See what Bonny and Tommy have done:

Mother bakes 52 cookies and they eat 16 of them. How many cookies are left?

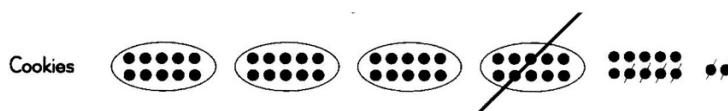


Figure 2.6

There are not enough units to take away the 6. Regroup a ten.

2.1.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:

1.1.1 the intervals specified in grade 2 with increased number ranges;

Assessment Standard 1.3: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;

Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers;

Assessment Standard 1.5: We know this when the learner recognises the place value of digits in whole numbers to at least 3-digit numbers;

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;

1.10.2 doubling and halving;

1.10.3 number-lines;

1.10.4 rounding off in tens.

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.2: We know this when the learner solves problems involving calculations with and conversions;

Assessment Standard 4.3: We know this when the learner identifies important dates on calendars;

Learning Outcome 5: The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

Assessment Standard 5.1: We know this when the learner collects data (alone and/or as a member of a group or team) in the classroom and school environment to answer questions posed by the teacher and class (e.g. 'how many learners walk to school?').

2.2 Coins²

2.2.1 MATHEMATICS

2.2.2 Bonny and Tommy's birthday party

2.2.3 EDUCATOR SECTION

2.2.4 Memorandum

- More advanced work is covered, but the educator will benefit greatly if pages (completing the calendar) are done with all the learners simultaneously. Groups 2 and 3 can then afterwards continue with the work with which they are busy.
- Number Concept to 400
- Operations:
- Addition – two digit numbers with two digit numbers, using regrouping of a ten.
- Subtraction – two digit numbers from two digit numbers, using regrouping of a ten.
- Multiplication – 2x, 4x, 5x and 10x to the 10th multiple (tables).
- Division - $\div 2$, $\div 4$, $\div 5$ and $\div 10$ to the 10th multiple (tables).

Integrate the design of the hat and the gift wrap with Technology. This can be done classically.

²This content is available online at <<http://cnx.org/content/m32457/1.1/>>.

All the calculations involving money and other quantities which the learners work with will enable them to realise that Mathematics is part of our daily activities.

From Module 3 onwards the learners will gradually progress to the more advanced work of Grade 3. It may be necessary sometimes to go back to previous work to expedite the transition to the advanced work.

It is important that the learners should realise that addition and subtraction combinations as well as the tables, multiplication and division, simply have to be repeated regularly and must be learnt until they know it! It is basic work that cannot be neglected.

Attached you will find a sheet with tables presented in a specific order. You can copy it and give it to the learners so that they can keep it with them.

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It is important for the learners to understand the difference between days of the week (7) and workdays, school days or week days (5), otherwise they may make numerous errors in their calculations.

The learners must be aware of the patterns that are used in completing tables, therefore they must identify the pattern initially before they try to complete the table.

This is a vertical numbers line. The negative numbers have been filled in so that the learner will realise that numbers smaller than 0 do exist. It is not necessary to give this aspect much attention at this stage. It can just be mentioned in passing, to satisfy the learners who are keen to know more.

Explain to the learners that they are seeing diagrams, and that each symbol represents the value of the place where it stands.

Regrouping the 10 is being done now. The learners must first lay it out on the mat, so that it is experienced as something concrete, and so that they can see that there are 12 units and that they can therefore make another ten. This ten is then grouped with the other tens.

It depends on the educator and the abilities of the learners whether they are going to use carried numbers when doing the vertical calculations

The breaking up of the ten is also learnt now. Learners must work with this on the mat in order to experience in concrete terms that there are not enough units and that a ten must be regrouped in order to get enough units. They must understand the breaking up (regrouping) of the ten very well before they can do it in writing.

Again it depends on the educator and the abilities of the learners whether they are going to make use of carried numbers in vertical calculations.

$2 \times 0 = 0$ $22 \times 2 = 44$ $62 \times 4 = 248$ $102 \times 6 = 612$ $= 142 \times 8 = 1136$ $9 = 182 \times 10 = 20$	$4 \times 0 = 0$ $44 \times 2 = 88$ $124 \times 4 = 496$ $= 204 \times 6 = 1224$ $7 = 284 \times 8 = 2272$ $\times 9 = 364 \times 10 = 40$		$0 \div 2 = 0$ $14 \div 2 = 7$ $38 \div 2 = 19$ $= 512 \div 2 = 256$ $2 = 716 \div 2 = 358$ $\div 2 = 920 \div 2 = 460$ 10	$0 \div 4 = 0$ $18 \div 4 = 4.5$ $= 316 \div 4 = 79$ $4 = 524 \div 4 = 131$ $\div 4 = 732 \div 4 = 183$ $836 \div 4 = 209$ $= 10$
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$5 \times 0 = 05 \times 1 =$ $55 \times 2 = 105 \times 3 =$ $155 \times 4 = 205 \times 5 =$ $255 \times 6 = 305 \times$ $7 = 355 \times 8 = 405$ $\times 9 = 455 \times 10 =$ 50	$10 \times 0 = 010 \times 1$ $= 1010 \times 2 = 2010$ $\times 3 = 3010 \times 4 =$ $4010 \times 5 = 5010$ $\times 6 = 6010 \times 7 =$ $7010 \times 8 = 8010 \times$ $9 = 9010 \times 10 =$ 100		$0 \div 5 = 05 \div 5 =$ $110 \div 5 = 215 \div 5 =$ $320 \div 5 = 425 \div$ $5 = 530 \div 5 = 635$ $\div 5 = 740 \div 5 =$ $845 \div 5 = 950 \div 5 =$ 10	$0 \div 10 = 010 \div 10$ $= 120 \div 10 = 230$ $\div 10 = 340 \div 10$ $= 450 \div 10 = 560$ $\div 10 = 670 \div 10 =$ $780 \div 10 = 890 \div$ $10 = 9100 \div 10 =$ 10
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Table 2.6

The important fact here is the equivalence of different coins. There are learners who will indicate 7c as 4c and 3c in coins, and who will not realise that such coins do not exist in our currency.

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Table 2.7

2.2.5 LEARNER SECTION

2.2.6 Content

2.2.6.1 ACTIVITY: Coins [LO 1.1, LO 1.6, LO 1.8, LO 1.9, LO 2.2]

- Bonny and Tommy are saving money to buy each other some presents.
- Make sure that you know what all the coins look like. Colour them.

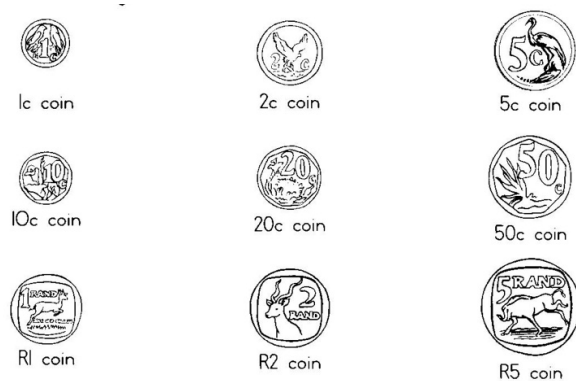


Figure 2.7

- Add up all the 5c coins:

$$\textcircled{5c} + \textcircled{5c} + \textcircled{5c} + \textcircled{5c} + \textcircled{5c} + \textcircled{5c} + \textcircled{5c} + \textcircled{5c} + \textcircled{5c} + \textcircled{5c} = ______c$$

Figure 2.8

- Draw the 5c coins that equal each amount:

20c	$\textcircled{5c}$ $\textcircled{5c}$ $\textcircled{5c}$ $\textcircled{5c}$	4	5c coins
40c			5c coins
15c			5c coins
35c			5c coins
25c			5c coins
10c			5c coins
45c			5c coins

Figure 2.9

- Count forwards in multiples of 5 and back again:

5 _____ 50
 50 _____ 5

- Find the pattern and complete the table:

	10	20	30	40	50	60	70	80	90	100
tens	1	2	3	4	5	6	7	8	9	10
fives	2	4								

Table 2.8

- See what happens if we switch the table around:

fives	1	2	3	4	5	6	7	8	9	10
tens	$\frac{1}{2}$	1	$1\frac{1}{2}$	2						
	5	10	15	20						

Table 2.9

- Think!

$5 \times 4 = \text{_____}$ $5 \times 2 = \text{_____}$ $5 \times 7 = \text{_____}$ $5 \times 10 = \text{_____}$ $5 \times 5 = \text{_____}$ $5 \times 8 = \text{_____}$ $5 \times 3 = \text{_____}$ $5 \times 9 = \text{_____}$ $5 \times 1 = \text{_____}$ $5 \times 6 = \text{_____}$ $5 \times 0 = \text{_____}$	Change around:	$4 \times 5 = \text{_____}$ $2 \times 5 = \text{_____}$ $7 \times 5 = \text{_____}$ $10 \times 5 = \text{_____}$ $5 \times 5 = \text{_____}$ $8 \times 5 = \text{_____}$ $3 \times 5 = \text{_____}$ $9 \times 5 = \text{_____}$ $1 \times 5 = \text{_____}$ $6 \times 5 = \text{_____}$ $0 \times 5 = \text{_____}$
--	----------------	--

$10 \div 5 = \text{_____}$ $25 \div 5 = \text{_____}$ $5 \div 5 = \text{_____}$ $30 \div 5 = \text{_____}$ $0 \div 5 = \text{_____}$	$50 \div 5 = \text{_____}$ $15 \div 5 = \text{_____}$ $20 \div 5 = \text{_____}$ $45 \div 5 = \text{_____}$ $35 \div 5 = \text{_____}$
--	--

$2 \times 8 = \text{_____}$ $5 \times 5 = \text{_____}$ $10 \times 9 = \text{_____}$ $5 \times 6 = \text{_____}$	$6 \times 10 = \text{_____}$ $3 \times 5 = \text{_____}$ $7 \times 2 = \text{_____}$ $9 \times 5 = \text{_____}$	$18 \div 2 = \text{_____}$ $30 \div 10 = \text{_____}$ $15 \div 5 = \text{_____}$ $20 \div 2 = \text{_____}$
---	---	---

Figure 2.10

Bonny and Tommy say:

It is easy to work with 1c, 2c, 5c and 10c coins.

- What is the amount in the purse?

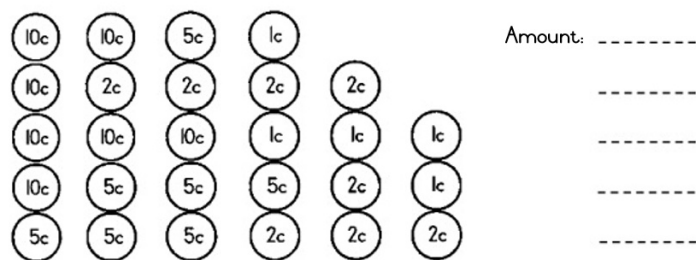


Figure 2.11

-
- Write down the value of the coins that are in their purses: (1c, 2c, 5c en 10c)






























9c	  
18c	   
56c	       
37c	       
23c	     

Figure 2.12

-
- Now decide which coins, and how many, are in their purses, and then draw them.

16c

47c

4c

63c

39c

28c

- Bonny and Tommy like tables.

- This table of equal values helps them to calculate how many and which coins they have to get when they fetch change from the bank.

R1 = 100c																			
50c										50c									
20c				20c				20c				20c				20c			
10c		10c		10c		10c		10c		10c		10c		10c		10c		10c	
5c	5c	5c	5c	5c	5c	5c	5c	5c	5c	5c	5c	5c	5c	5c	5c	5c	5c	5c	5c

Table 2.10

- Complete the tables:

R1 coins	1	2	3	4	5	6	7	8	9	10
50c coins	2	4								

Table 2.11

R1 coins	1	2	3	4	5	6	7	8	9	10
10c coins	10	20	30							

Table 2.12

- Bonny has 10 10c coins in her purse. She swops with Tommy who gives her 1 coin for them. Which coin did he give her?

She got a _____ coin.

- Tommy has a R2 coin and exchanges it with his mother for 50c coins. How many coins did he get?

He got a _____ 50c coins.

- Bonny goes to the bank with 200 1c coins. She comes back with 2 coins. What did the bank give her?

She got 2 _____ coins.

Who knows?

R1 = _____ c R2 = _____ c R3 = _____ c

R4 = _____ c R5 = _____ c R10 = _____ c

- Use any method to do the calculations, but show how you do them. Leave out the R and c signs when you do the calculations, but remember to write them down when you give the answer.

R45 + R23 = _____	R60 + R28 = _____
R28 + R52 = _____	R39 + R16 + R20 = _____
48c - 15c = _____	96c - 50c = _____
80c - 27c = _____	94c - 30c - 16c = _____

Table 2.13

$$50c + 50c + 50c + 50c + 50c + 50c + 50c = \underline{\hspace{2cm}}$$

- Solve the problems in your own way.
- Write down the number sentences.

1. Bonny bought 3 chocolates. Each one cost 31c. How much did she pay?

She paid $\underline{\hspace{2cm}}$.

How much change did she get if she paid with a R1-coin?

She got $\underline{\hspace{2cm}}$.

2. Tommy bought 5 bags of marbles. Each bag cost R2,10. How much did he pay for all the marbles?

He paid $\underline{\hspace{2cm}}$.

He gave R12. How much change did he get?

He got $\underline{\hspace{2cm}}$.

3. Bonny would very much like to buy herself a pen. The pen costs R13 and she has R10, 80 in her purse. How much does she still need?

She needs $\underline{\hspace{2cm}}$.

4. Every day Tommy buys himself an ice cream that costs R2. He has R14 left in his purse. For how many days will he still be able to buy an ice cream?

He can $\underline{\hspace{2cm}}$.

5. Mommy gave Bonny and Tommy R65 to share equally between the two of them. How much did each one get?

Each one got $\underline{\hspace{2cm}}$.

6. How many c in:

$$R1,67 = \underline{\hspace{1cm}} c \quad R2,99 = \underline{\hspace{1cm}} c \quad R3,06 = \underline{\hspace{1cm}} c$$

$$R1,20 + R1,15 = \underline{\hspace{1cm}} c \quad R0,55 + R4,10 = \underline{\hspace{1cm}} c$$

7. Make each amount R1, 50 more:

$$R20,20 \quad \underline{\hspace{1cm}} \quad R29,49 \quad \underline{\hspace{1cm}}$$

- Calculate the costs of what we buy:



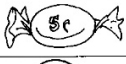



I buy:		I pay:	
5		$5 \times 6 = \underline{\hspace{1cm}}$	$\underline{\hspace{1cm}} c$
2		$2 \times 30 = \underline{\hspace{1cm}}$	$\underline{\hspace{1cm}} c$
8		$8 \times 5 = \underline{\hspace{1cm}}$	$\underline{\hspace{1cm}} c$
9		$9 \times 10 = \underline{\hspace{1cm}}$	$\underline{\hspace{1cm}} c$
3		$3 \times 5 = \underline{\hspace{1cm}}$	R $\underline{\hspace{1cm}}$
1		$1 \times 15 = \underline{\hspace{1cm}}$	R $\underline{\hspace{1cm}}$

Figure 2.13

- Calculate the change:

Koop vir:	Betaal met:	Kleingeld:
35c	50c	-----
79c	90c	-----
R75	R100	-----

Table 2.14

- Mommy says that Bonny and Tommy may each invite 4 friends to their party.
1. There will be _____ children. (Make sure that your answer is correct.)
 2. Calculate how many of everything they need and how much it costs.

Ice creams	2 per person is ____	@ R2 each is _____
Lollipops	3 per person is ____	@ R1 each is _____
Cookies	4 per person is ____	@ 50c each is _____
Cool drinks	2 per person is ____	@ R1 each is _____
		Total amount: _____

Figure 2.14

2.2.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:

1.1.1 the intervals specified in grade 2 with increased number ranges;

Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents;

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.2: We know this when the learner copies and extends simple number sequences to at least 1 000.

ool?").

2.3 Halve³

2.3.1 MATHEMATICS

2.3.2 Bonny and Tommy's birthday party

2.3.3 EDUCATOR SECTION

2.3.4 Memorandum

- More advanced work is covered, but the educator will benefit greatly if pages (completing the calendar) are done with all the learners simultaneously. Groups 2 and 3 can then afterwards continue with the work with which they are busy.
- Number Concept to 400
- Operations:
 - Addition – two digit numbers with two digit numbers, using regrouping of a ten.
 - Subtraction – two digit numbers from two digit numbers, using regrouping of a ten.
 - Multiplication – $2x$, $4x$, $5x$ and $10x$ to the 10th multiple (tables).
 - Division - $\div 2$, $\div 4$, $\div 5$ and $\div 10$ to the 10th multiple (tables).

Integrate the design of the hat and the gift wrap with Technology. This can be done classically.

All the calculations involving money and other quantities which the learners work with will enable them to realise that Mathematics is part of our daily activities.

From Module 3 onwards the learners will gradually progress to the more advanced work of Grade 3. It may be necessary sometimes to go back to previous work to expedite the transition to the advanced work.

It is important that the learners should realise that addition and subtraction combinations as well as the tables, multiplication and division, simply have to be repeated regularly and must be learnt until they know it! It is basic work that cannot be neglected.

Attached you will find a sheet with tables presented in a specific order. You can copy it and give it to the learners so that they can keep it with them.

These worksheets can be presented to the whole class at the same time. Learners must write the dates on the calendar on their own, therefore it is of the utmost importance that you will make quite sure that all the learners begin on the correct day in January. I suggest that you fill in 1 January yourself before copying the worksheet. If you like, you could even fill it in further, depending on the competence of the learners.

It is important for the learners to understand the difference between days of the week (7) and workdays, school days or week days (5), otherwise they may make numerous errors in their calculations.

The learners must be aware of the patterns that are used in completing tables, therefore they must identify the pattern initially before they try to complete the table.

This is a vertical numbers line. The negative numbers have been filled in so that the learner will realise that numbers smaller than 0 do exist. It is not necessary to give this aspect much attention at this stage. It can just be mentioned in passing, to satisfy the learners who are keen to know more.

Explain to the learners that they are seeing diagrams, and that each symbol represents the value of the place where it stands.

Regrouping the 10 is being done now. The learners must first lay it out on the mat, so that it is experienced as something concrete, and so that they can see that there are 12 units and that they can therefore make another ten. This ten is then grouped with the other tens.

It depends on the educator and the abilities of the learners whether they are going to use carried numbers when doing the vertical calculations

The breaking up of the ten is also learnt now. Learners must work with this on the mat in order to experience in concrete terms that there are not enough units and that a ten must be regrouped in order to get enough units. They must understand the breaking up (regrouping) of the ten very well before they can do it in writing.

³This content is available online at <<http://cnx.org/content/m32453/1.1/>>.

Again it depends on the educator and the abilities of the learners whether they are going to make use of carried numbers in vertical calculations.

$2 \times 0 = 02 \times 1 =$ $22 \times 2 = 42 \times 3 =$ $62 \times 4 = 82 \times 5 =$ $102 \times 6 = 122 \times 7$ $= 142 \times 8 = 162 \times$ $9 = 182 \times 10 = 20$	$4 \times 0 = 04 \times 1 =$ $44 \times 2 = 84 \times 3 =$ $124 \times 4 = 164 \times 5$ $= 204 \times 6 = 244 \times$ $7 = 284 \times 8 = 324$ $\times 9 = 364 \times 10 =$ 40		$0 \div 2 = 02 \div 2 =$ $14 \div 2 = 26 \div 2 =$ $38 \div 2 = 410 \div 2$ $= 512 \div 2 = 614 \div$ $2 = 716 \div 2 = 818$ $\div 2 = 920 \div 2 =$ 10	$0 \div 4 = 04 \div 4 =$ $18 \div 4 = 212 \div 4$ $= 316 \div 4 = 420 \div$ $4 = 524 \div 4 = 628$ $\div 4 = 732 \div 4 =$ $836 \div 4 = 940 \div 4$ $= 10$
$5 \times 0 = 05 \times 1 =$ $55 \times 2 = 105 \times 3 =$ $155 \times 4 = 205 \times 5$ $= 255 \times 6 = 305 \times$ $7 = 355 \times 8 = 405$ $\times 9 = 455 \times 10 =$ 50	$10 \times 0 = 010 \times 1$ $= 1010 \times 2 = 2010$ $\times 3 = 3010 \times 4 =$ $4010 \times 5 = 5010$ $\times 6 = 6010 \times 7 =$ $7010 \times 8 = 8010 \times$ $9 = 9010 \times 10 =$ 100		$0 \div 5 = 05 \div 5 =$ $110 \div 5 = 215 \div 5$ $= 320 \div 5 = 425 \div$ $5 = 530 \div 5 = 635$ $\div 5 = 740 \div 5 =$ $845 \div 5 = 950 \div 5$ $= 10$	$0 \div 10 = 010 \div 10$ $= 120 \div 10 = 230$ $\div 10 = 340 \div 10$ $= 450 \div 10 = 560$ $\div 10 = 670 \div 10 =$ $780 \div 10 = 890 \div$ $10 = 9100 \div 10 =$ 10
$3 \times 0 = 03 \times 1 =$ $33 \times 2 = 63 \times 3 =$ $93 \times 4 = 123 \times 5 =$ $153 \times 6 = 183 \times 7$ $= 213 \times 8 = 243 \times$ $9 = 273 \times 10 = 30$	$6 \times 0 = 06 \times 1 =$ $66 \times 2 = 126 \times 3 =$ $186 \times 4 = 246 \times 5$ $= 306 \times 6 = 366 \times$ $7 = 426 \times 8 = 486$ $\times 9 = 546 \times 10 =$ 60		$0 \div 3 = 03 \div 3 =$ $16 \div 3 = 29 \div 3 =$ $312 \div 3 = 415 \div 3$ $= 518 \div 3 = 621 \div$ $3 = 724 \div 3 = 827$ $\div 3 = 930 \div 3 =$ 10	$0 \div 6 = 06 \div 6 =$ $112 \div 6 = 218 \div 6$ $= 324 \div 6 = 430 \div$ $6 = 536 \div 6 = 642$ $\div 6 = 748 \div 6 =$ $854 \div 6 = 960 \div 6$ $= 10$

Table 2.15

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Table 2.16

2.3.5 LEARNER SECTION

2.3.6 Content

2.3.6.1 ACTIVITY: Halve [LO 1.4, LO 1.7, LO 1.8, LO 1.10, LO 3.1, LO 3.3, LO 4.6]

- Bonny and Tommy want to make a party hat for each child. You will have to help with the design. Complete yours and tell us how you planned and made it.

I used a circle in my design. I am saying no more.

- How can we draw a circle?

Use any round object to draw it, or a stencil, or a pair of compasses. At home you can use a plate if you want to draw a circle.

- What do we know about circles?

They are round and have no angles. Look at the circle below and then we'll learn more about circles:

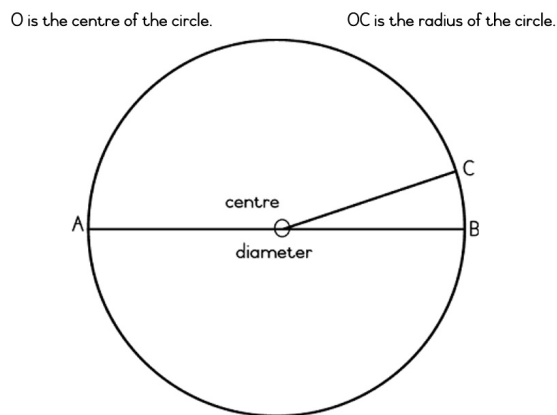


Figure 2.15

AB is the diameter. It halves the circle.

- All lines that you draw from the centre to the circumference of the circle will be exactly the same length. We call such a line the radius of the circle.
- Take a piece of string or wool and lay it precisely on the circular line (the circumference). Measure the length of the string on your ruler. That is how you can measure the circumference of a circle.
- Bonny and Tommy are very keen to work with circles.

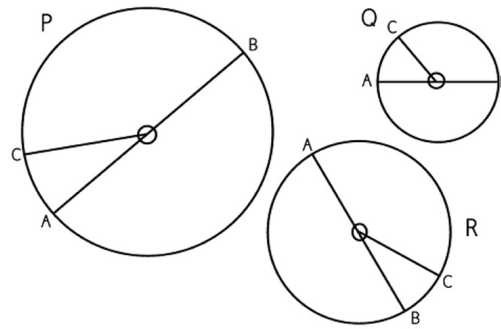


Figure 2.16

- Measure the radius and the circumference of each circle and write it down here.

Circle P: Radius = _____ cm Diameter = _____ cm

Circle Q: Radius = _____ cm Diameter = _____ cm

Circle R: Radius = _____ cm Diameter = _____ cm

- What have you discovered? _____

Now we know: $2 \times \text{Radius} = \text{Diameter}$ and $\text{Diameter} \div 2 = \text{Radius}$

- Use this to calculate the lengths:

Circle W: Radius = 5cm Diameter = _____ cm (Double)

Circle X: Radius = 8cm Diameter = _____ cm

Circle Y: Diameter = 12cm Radius = _____ cm (Halve)

Circle Z: Diameter = 22cm Radius = _____ cm

- How can you find the centre of a circle that has been drawn without a pair of compasses?

Draw 2 circles that are exactly the same size. Cut out one of the circles. Fold it exactly in half and then in half again. Open it out and find the spot where the 4 folds cross in the centre. That is the centre of the circle. Lay it exactly on the other circle and push a pin down through the centre to make a mark on the circle below. Try it at home and come and show it to the class.

- This circle is divided into 4 equal parts. It is divided into 4 quarters.

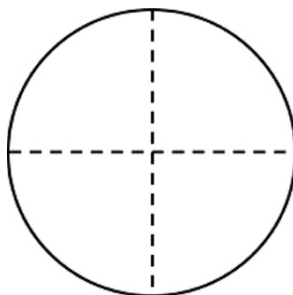


Figure 2.17

- ☺ Colour **one** of the quarters. That is 1 of the 4 parts. This is how we write it: $\frac{1}{4}$
- ☺ Now colour another **quarter** of the circle. What do you see? The two **quarters** of the circle are exactly the same size as **one half** of the circle, thus $\frac{2}{4} = \frac{1}{2}$
- ☺ Now colour one more quarter of the circle. Now 3 of the 4 parts have been coloured in. This is how we write it: $\frac{3}{4}$. So we see that $\frac{1}{4} + \frac{1}{2} = \frac{3}{4}$
- Colour another quarter in. Now the whole circle has been coloured in, thus $\frac{4}{4} = 1$.
- ☺ Divide each of the shapes into **4 quarters**. Use any method.
- ☺ Colour $\frac{1}{4}$ of the largest square, and $\frac{1}{2}$ of the largest rectangle
- ☺ Colour $\frac{3}{4}$ of the other square and the whole of the rectangle that is still left.

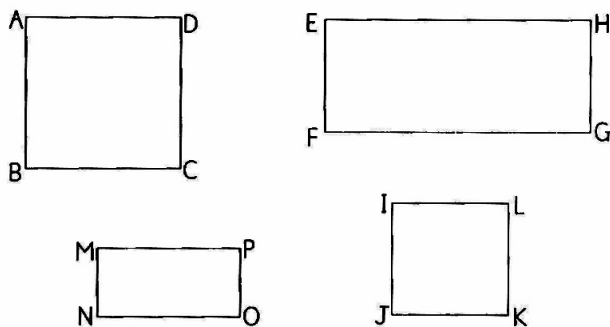


Figure 2.18

- Sometimes Bonny and Tommy share their sweets with Mommy and Daddy.
- Can you still remember how we folded the circle into 4 equal parts? We folded the circle in half and then in half again.
- That is exactly what they do with the sweets.

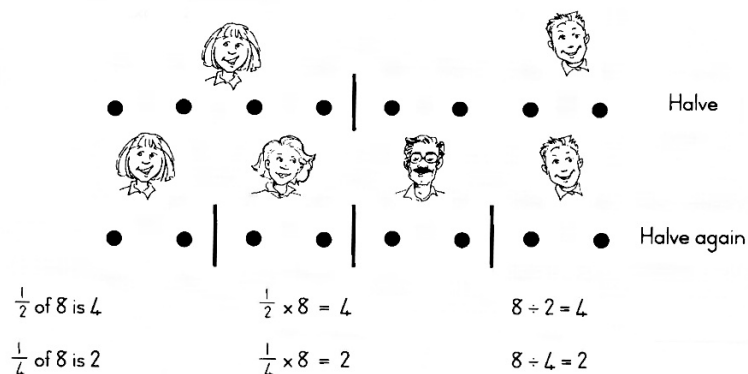


Figure 2.19

All multiples of 4 can easily be divided into quarters like this.

- Count in multiples of 4 up to the 10th multiple and back again.

4	8	----	----	----	----	----	----	----	----
40	----	----	----	----	----	----	----	----	4

Table 2.17

- Complete the table.

Multiples of 4	4	8	12	16	20	24	28	32	36	40
$\div 2$	2	4								
$\div 4$	1	2								

Table 2.18

- Thus: $\div 4$ is the same as halving 2 times.

Number	Halve	Halve again
<i>continued on next page</i>		

4080601008492			$40 \div 4 = \underline{\quad\quad\quad} 80$ $\div 4 = \underline{\quad\quad\quad} 60 \div$ $4 = \underline{\quad\quad\quad} 100 \div$ $4 = \underline{\quad\quad\quad} 84 \div 4$ $= \underline{\quad\quad\quad} 92 \div 4 =$ $\underline{\quad\quad\quad}$
---------------	--	--	---

Table 2.19

Think!

 $12 \div 2 = \underline{\quad\quad}$
 $20 \div 2 = \underline{\quad\quad}$
 $24 \div 2 = \underline{\quad\quad}$
 $32 \div 2 = \underline{\quad\quad}$
 $28 \div 2 = \underline{\quad\quad}$
 $40 \div 2 = \underline{\quad\quad}$
 $16 \div 2 = \underline{\quad\quad}$
 $36 \div 2 = \underline{\quad\quad}$

$12 \div 4 = \underline{\quad\quad}$
 $20 \div 4 = \underline{\quad\quad}$
 $24 \div 4 = \underline{\quad\quad}$
 $32 \div 4 = \underline{\quad\quad}$
 $28 \div 4 = \underline{\quad\quad}$
 $40 \div 4 = \underline{\quad\quad}$
 $16 \div 4 = \underline{\quad\quad}$
 $36 \div 4 = \underline{\quad\quad}$

☺ I have 9 apples and I must divide them equally amongst 4 children.
 Number sentence: $9 \div 4 = \underline{\quad\quad}$

☺ 9 is not a multiple of 4. Regroup it to: $9 = 8 + 1$
 Halve 8 2 times and then divide the other 1 into 2 halves first, and then into 4 quarters.

$\begin{array}{cccc} \circ & \circ & \circ & \circ \\ \hline & 4 & & \\ \hline \circ & \circ & \circ & \circ \\ \hline & 2 & & 2 \end{array}$

$\begin{array}{cccc} \circ & \circ & \circ & \circ \\ \hline & 4 & & \\ \hline \circ & \circ & \circ & \circ \\ \hline & 2 & & 2 \end{array}$

$\begin{array}{c} \phi \\ \hline \frac{1}{2} \quad \frac{1}{2} \\ \hline \phi \\ \hline \frac{1}{4} \quad \frac{1}{4} \quad \frac{1}{4} \quad \frac{1}{4} \end{array}$

$\frac{1}{4}$ van 9 is $2\frac{1}{4}$ $\frac{1}{4} \times 9 = 2\frac{1}{4}$ $9 \div 4 = 2\frac{1}{4}$

Numbers that are not multiples of 4, have a fraction in the answer.

☺ Draw a circle around the multiples of 4:

1 2 3 **4** 5 6 7 **8** 9 10 11 12 13 14 15 16 17 18 19 20
 21 22 23 **24** 25 26 27 **28** 29 30 31 32 33 34 35 36 37 38 39 40

Not multiples of 4	Regroup	
13	$12 + 1$	$12 \div 4$ and $1 \div 4$
21	-----	----- and -----
33	-----	----- and -----
10	$8 + 2$	$8 \div 4$ and $2 \div 4$
18	-----	----- and -----
38	-----	----- and -----
7	$4 + 3$	$4 \div 4$ and $3 \div 4$
27	-----	----- and -----
43	-----	----- and -----

Figure 2.20

2.3.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers:

Assessment Standard 1.7: We know this when the learner solves and explains solutions to practical problems that involve equal sharing and grouping and that lead to solutions that also include unitary and nonunitary fractions (e.g. $\frac{1}{4}$, $\frac{3}{4}$);

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;

1.10.2 doubling and halving;

1.10.3 number-lines;

1.10.4 rounding off in tens.

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

Assessment Standard 3.1: We know this when the learner recognises, identifies and names two-dimensional shapes and three-dimensional objects in the environment and in pictures;

Assessment Standard 3.3: We know this when the learner observes and creates given and described two-dimensional shapes and three-dimensional objects using concrete materials (e.g. building blocks, construction sets, cut-out two-dimensional shapes, clay, drinking straws);

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.6: We know this when the learner investigates (alone and/or as a member of a group or team) and approximates.

2.4 Multiplication⁴

2.4.1 MATHEMATICS

2.4.2 Bonny and Tommy's birthday party

2.4.3 EDUCATOR SECTION

2.4.4 Memorandum

- More advanced work is covered, but the educator will benefit greatly if pages (completing the calendar) are done with all the learners simultaneously. Groups 2 and 3 can then afterwards continue with the work with which they are busy.
- Number Concept to 400
- Operations:
- Addition – two digit numbers with two digit numbers, using regrouping of a ten.
- Subtraction – two digit numbers from two digit numbers, using regrouping of a ten.
- Multiplication – 2x, 4x, 5x and 10x to the 10th multiple (tables).
- Division - $\div 2$, $\div 4$, $\div 5$ and $\div 10$ to the 10th multiple (tables).

Integrate the design of the hat and the gift wrap with Technology. This can be done classically.

All the calculations involving money and other quantities which the learners work with will enable them to realise that Mathematics is part of our daily activities.

⁴This content is available online at <<http://cnx.org/content/m32454/1.1/>>.

From Module 3 onwards the learners will gradually progress to the more advanced work of Grade 3. It may be necessary sometimes to go back to previous work to expedite the transition to the advanced work.

It is important that the learners should realise that addition and subtraction combinations as well as the tables, multiplication and division, simply have to be repeated regularly and must be learnt until they know it! It is basic work that cannot be neglected.

Attached you will find a sheet with tables presented in a specific order. You can copy it and give it to the learners so that they can keep it with them.

These worksheets can be presented to the whole class at the same time. Learners must write the dates on the calendar on their own, therefore it is of the utmost importance that you will make quite sure that all the learners begin on the correct day in January. I suggest that you fill in 1 January yourself before copying the worksheet. If you like, you could even fill it in further, depending on the competence of the learners.

It is important for the learners to understand the difference between days of the week (7) and workdays, school days or week days (5), otherwise they may make numerous errors in their calculations.

The learners must be aware of the patterns that are used in completing tables, therefore they must identify the pattern initially before they try to complete the table.

This is a vertical numbers line. The negative numbers have been filled in so that the learner will realise that numbers smaller than 0 do exist. It is not necessary to give this aspect much attention at this stage. It can just be mentioned in passing, to satisfy the learners who are keen to know more.

Explain to the learners that they are seeing diagrams, and that each symbol represents the value of the place where it stands.

Regrouping the 10 is being done now. The learners must first lay it out on the mat, so that it is experienced as something concrete, and so that they can see that there are 12 units and that they can therefore make another ten. This ten is then grouped with the other tens.

It depends on the educator and the abilities of the learners whether they are going to use carried numbers when doing the vertical calculations

The breaking up of the ten is also learnt now. Learners must work with this on the mat in order to experience in concrete terms that there are not enough units and that a ten must be regrouped in order to get enough units. They must understand the breaking up (regrouping) of the ten very well before they can do it in writing.

Again it depends on the educator and the abilities of the learners whether they are going to make use of carried numbers in vertical calculations.

$2 \times 0 = 0$ $22 \times 2 = 44$ $62 \times 4 = 248$ $102 \times 6 = 612$ $= 142 \times 8 = 1136$ $9 = 182 \times 10 = 1820$	$4 \times 0 = 0$ $44 \times 2 = 88$ $124 \times 4 = 496$ $= 204 \times 6 = 1224$ $7 = 284 \times 8 = 2272$ $\times 9 = 364 \times 10 = 3640$		$0 \div 2 = 0$ $14 \div 2 = 7$ $38 \div 2 = 19$ $= 512 \div 2 = 256$ $2 = 716 \div 2 = 358$ $\div 2 = 920 \div 2 = 460$ 10	$0 \div 4 = 0$ $18 \div 4 = 4 \text{ R } 2$ $= 316 \div 4 = 79 \text{ R } 0$ $4 = 524 \div 4 = 131$ $\div 4 = 732 \div 4 = 183$ $836 \div 4 = 209$ $= 10$
<i>continued on next page</i>				

$5 \times 0 = 05 \times 1 =$ $55 \times 2 = 105 \times 3 =$ $155 \times 4 = 205 \times 5 =$ $255 \times 6 = 305 \times$ $7 = 355 \times 8 = 405$ $\times 9 = 455 \times 10 =$ 50	$10 \times 0 = 010 \times 1$ $= 1010 \times 2 = 2010$ $\times 3 = 3010 \times 4 =$ $4010 \times 5 = 5010$ $\times 6 = 6010 \times 7 =$ $7010 \times 8 = 8010 \times$ $9 = 9010 \times 10 =$ 100		$0 \div 5 = 05 \div 5 =$ $110 \div 5 = 215 \div 5 =$ $320 \div 5 = 425 \div$ $5 = 530 \div 5 = 635$ $\div 5 = 740 \div 5 =$ $845 \div 5 = 950 \div 5 =$ 10	$0 \div 10 = 010 \div 10$ $= 120 \div 10 = 230$ $\div 10 = 340 \div 10$ $= 450 \div 10 = 560$ $\div 10 = 670 \div 10 =$ $780 \div 10 = 890 \div$ $10 = 9100 \div 10 =$ 10
$3 \times 0 = 03 \times 1 =$ $33 \times 2 = 63 \times 3 =$ $93 \times 4 = 123 \times 5 =$ $153 \times 6 = 183 \times 7$ $= 213 \times 8 = 243 \times$ $9 = 273 \times 10 = 30$	$6 \times 0 = 06 \times 1 =$ $66 \times 2 = 126 \times 3 =$ $186 \times 4 = 246 \times 5$ $= 306 \times 6 = 366 \times$ $7 = 426 \times 8 = 486$ $\times 9 = 546 \times 10 =$ 60		$0 \div 3 = 03 \div 3 =$ $16 \div 3 = 29 \div 3 =$ $312 \div 3 = 415 \div 3$ $= 518 \div 3 = 621 \div$ $3 = 724 \div 3 = 827$ $\div 3 = 930 \div 3 =$ 10	$0 \div 6 = 06 \div 6 =$ $112 \div 6 = 218 \div 6$ $= 324 \div 6 = 430 \div$ $6 = 536 \div 6 = 642$ $\div 6 = 748 \div 6 =$ $854 \div 6 = 960 \div 6$ $= 10$

Table 2.20

The important fact here is the equivalence of different coins. There are learners who will indicate 7c as 4c and 3c in coins, and who will not realise that such coins do not exist in our currency.

It is also the ideal opportunity for learners to learn $5x$ and \div if they have not yet done so.

Point out to the learners that in calculations the R and c are left out, but that they must be inserted in the completed number sentence (answers).

Encourage the learners to keep on drawing what they read and then to write the number sentence in order to solve the problem.

Make very sure that all the learners know that there will be 10 children at the party. (8 + Bonny + Tommy) If this information is incorrect, all the following calculations will be extremely difficult.

Designing and making the party hat can be done as part of Technology.

Demonstrate and discuss the 3 ways in which to draw a circle.

Do a great deal of practical work.

Make sure that they understand and know what the centre, diameter and radius of a circle is, and that $2x$ radius = diameter. Explain to the learners what the circumference of the circle is.

The learners must indicate all points with letters right from the beginning. Show them that it makes it much easier to discuss and explain various aspects of the construction. They must understand that they may use any letter, as long as the same letter is not used twice in the same construction.

Once more discuss the different ways in which to divide squares and rectangles into halves and quarters.

Much concrete and semi-concrete work must be done when the learners have to divide numbers into quarters, especially when the number is not a multiple of 4. Use objects such as fruit and soft sweets that can actually be broken up quite easily, and not hard objects such as marbles, stones or bottle caps.

Explain to the learners that it will depend on the problem whether you can break it up into fractions or not.

Look at this: Daddy has 25 sheep that have to be herded into 4 pens. How many sheep will there be in each pen? (The remaining sheep cannot be cut up.)

Daddy has slaughtered 25 sheep and takes them to 4 butcheries. How many does each butchery get? (It will certainly be possible to divide the remaining sheep into 4.) Discuss more similar examples.

As soon as the learners understand that $4x$ is 2 times doubled, and $4\div$ is two times halved, this can be drilled, because they must know the tables.

This is a wonderful way of familiarising learners with posing problems, but it demands much and regular practice. As soon as they understand it and can do it with confidence, they put forward wonderful ideas.

Begin with a very simple number sentence, e.g. $3 + 4 = \square$. Initially, let the learners name objects with which they can possibly work, and write these suggestions on the blackboard: trees, flowers, sweets, sheep, dogs, etc.

Everyone must be involved and try to give suggestions. Make the rows compete and then let them pose the problems as a kind of competition.

The vertical addition and subtraction calculations have been graded from simple to difficult so that it will be easy for you to determine a learner's problem(s). This will enable you to concentrate on the problem areas only and to give appropriate similar exercises to help them.

With the last row of addition calculations, completing the hundred (carrying over the tens) is done incidentally to determine which of the learners understand this already. However, you are free to facilitate this formally now.

It must be a pattern that is repeated every 2 blocks and therefore it must be exactly the same throughout. It can also be offered with Technology, and the learners can then draw their own blocks on a larger sheet of paper.

Explain rounding off to the nearest R to the learners. Let them bring old catalogues and practise rounding off until they understand it.

This worksheet will give you a good idea of which learners are able to follow and carry out instructions.

Any learner who has a good grasp of hundreds, tens and units at this stage, should be capable of completing this worksheet quite easily. Point out to the learners that if they do not get the same answer in the balloon vertically and horizontally, there is a mistake somewhere and they will have to check the answers vertically and horizontally again.

More examples with smaller numbers can also be given.

241620	301026	502948	1045594
60	66	127	253



Table 2.21

2.4.5 LEARNER SECTION

2.4.6 Content

2.4.6.1 ACTIVITY: Multiplication [LO 1.7, LO 1.8, LO 1.9, LO 1.10, LO 2.3, LO 3.6, LO 4.5]

- Bonny and Tommy want to find out what happens if you double a number 2 times.

Double 5:  Double 5 again: 

5 + 5 + 5 + 5 = 20

○○○○○ ●●●●● ○○○○○ ●●●●●

It is **4 times 5**. Thus: **4x** is the same as **doubling twice**.

Number	Double	Double again	
3	6	12	$4 \times 3 = 12$
7	_____	_____	$4 \times 7 = \underline{\hspace{2cm}}$
1	_____	_____	$4 \times 1 = \underline{\hspace{2cm}}$
6	_____	_____	$4 \times 6 = \underline{\hspace{2cm}}$
4	_____	_____	$4 \times 4 = \underline{\hspace{2cm}}$
10	_____	_____	$4 \times 10 = \underline{\hspace{2cm}}$
8	_____	_____	$4 \times 8 = \underline{\hspace{2cm}}$
2	_____	_____	$4 \times 2 = \underline{\hspace{2cm}}$
9	_____	_____	$4 \times 9 = \underline{\hspace{2cm}}$

Think!

$4 \times 2 = \underline{\hspace{2cm}}$	$6 \times 4 = \underline{\hspace{2cm}}$	$12 \div 4 = \underline{\hspace{2cm}}$
$4 \times 7 = \underline{\hspace{2cm}}$	$10 \times 4 = \underline{\hspace{2cm}}$	$4 \div 4 = \underline{\hspace{2cm}}$
$4 \times 3 = \underline{\hspace{2cm}}$	$8 \times 4 = \underline{\hspace{2cm}}$	$40 \div 4 = \underline{\hspace{2cm}}$
$4 \times 9 = \underline{\hspace{2cm}}$	$1 \times 4 = \underline{\hspace{2cm}}$	$20 \div 4 = \underline{\hspace{2cm}}$
$4 \times 4 = \underline{\hspace{2cm}}$	$9 \times 4 = \underline{\hspace{2cm}}$	$32 \div 4 = \underline{\hspace{2cm}}$
$4 \times 10 = \underline{\hspace{2cm}}$	$3 \times 4 = \underline{\hspace{2cm}}$	$16 \div 4 = \underline{\hspace{2cm}}$
$4 \times 6 = \underline{\hspace{2cm}}$	$7 \times 4 = \underline{\hspace{2cm}}$	$8 \div 4 = \underline{\hspace{2cm}}$
$4 \times 5 = \underline{\hspace{2cm}}$	$2 \times 4 = \underline{\hspace{2cm}}$	$24 \div 4 = \underline{\hspace{2cm}}$
$4 \times 8 = \underline{\hspace{2cm}}$	$5 \times 4 = \underline{\hspace{2cm}}$	$36 \div 4 = \underline{\hspace{2cm}}$

Figure 2.21

- Write a number sentence and solve the problem. Show how you do it.

Mother bakes 20 cookies and packs them into 4 tins. How many cookies has she packed into each tin?

- She packed _____

Sometimes Bonny and Tommy use the number sentences to write their own stories. See if you can do it too. Then do the calculation.

$54 + 34 = \underline{\hspace{2cm}}$
$87 - 52 = \underline{\hspace{2cm}}$
$10 \times 6 = \underline{\hspace{2cm}}$
$50 \div 5 = \underline{\hspace{2cm}}$

Table 2.22

$\begin{array}{r} 6 \\ + 3 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ + 1 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ + 3 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ + 7 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ + 5 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ + 9 \\ \hline \end{array}$
$\begin{array}{r} 10 \\ + 40 \\ \hline \end{array}$	$\begin{array}{r} 40 \\ + 50 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ + 20 \\ \hline \end{array}$	$\begin{array}{r} 25 \\ + 30 \\ \hline \end{array}$	$\begin{array}{r} 63 \\ + 10 \\ \hline \end{array}$	$\begin{array}{r} 36 \\ + 50 \\ \hline \end{array}$
$\begin{array}{r} 35 \\ + 34 \\ \hline \end{array}$	$\begin{array}{r} 52 \\ + 25 \\ \hline \end{array}$	$\begin{array}{r} 24 \\ + 63 \\ \hline \end{array}$	$\begin{array}{r} 79 \\ + 18 \\ \hline \end{array}$	$\begin{array}{r} 67 \\ + 25 \\ \hline \end{array}$	$\begin{array}{r} 43 \\ + 39 \\ \hline \end{array}$
$\begin{array}{r} 40 \\ + 60 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ + 70 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ + 90 \\ \hline \end{array}$	$\begin{array}{r} 56 \\ + 60 \\ \hline \end{array}$	$\begin{array}{r} 83 \\ + 40 \\ \hline \end{array}$	$\begin{array}{r} 37 \\ + 70 \\ \hline \end{array}$
$\begin{array}{r} 9 \\ - 3 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ - 2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ - 4 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ - 3 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ - 9 \\ \hline \end{array}$	$\begin{array}{r} 36 \\ - 7 \\ \hline \end{array}$
$\begin{array}{r} 30 \\ - 10 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ - 30 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ - 20 \\ \hline \end{array}$	$\begin{array}{r} 62 \\ - 30 \\ \hline \end{array}$	$\begin{array}{r} 48 \\ - 30 \\ \hline \end{array}$	$\begin{array}{r} 98 \\ - 90 \\ \hline \end{array}$
$\begin{array}{r} 57 \\ - 16 \\ \hline \end{array}$	$\begin{array}{r} 83 \\ - 61 \\ \hline \end{array}$	$\begin{array}{r} 39 \\ - 14 \\ \hline \end{array}$	$\begin{array}{r} 67 \\ - 27 \\ \hline \end{array}$	$\begin{array}{r} 78 \\ - 28 \\ \hline \end{array}$	$\begin{array}{r} 95 \\ - 65 \\ \hline \end{array}$
$\begin{array}{r} 40 \\ - 9 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ - 17 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ - 25 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ - 5 \\ \hline \end{array}$	$\begin{array}{r} 82 \\ - 16 \\ \hline \end{array}$	$\begin{array}{r} 71 \\ - 36 \\ \hline \end{array}$

Figure 2.22

- Use the blocks and design a pattern for the gift-wrap for Bonny and Tommy.

Table 2.23

- Here are some gifts you could buy for Bonny and Tommy. Let us round off the prices to the nearest rand. If the cents are 50c or more than 50c, R1 is added, but if it is 49c or less, it is thrown away.

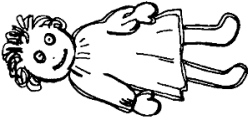

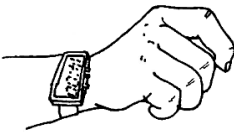
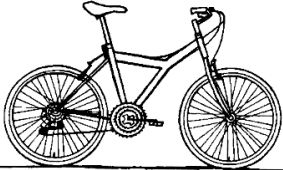
 <p>Price: R31,79 Rounded off: _____</p>	 <p>Price: 25,25 Rounded off: _____</p>
 <p>Price: R139,49 Rounded off: _____</p>	 <p>Price: R299,98 Rounded off: _____</p>

Figure 2.23

Assessment Standard 1.7: We know this when the learner solves and explains solutions to practical problems that involve equal sharing and grouping and that lead to solutions that also include unitary and nonunitary fractions (bv. $\frac{1}{4}$, $\frac{3}{4}$);

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;

1.10.2 doubling and halving;

1.10.3 number-lines;

1.10.4 rounding off in tens.

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects

Assessment Standard 3.6: We know this when the learner reads, interprets and draws informal maps of the school environment or of an arrangement of three-dimensional objects and locates objects on the map;

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.5: We know this when the learner estimates, measures, compares and orders three-dimensional objects using non- standard and standard measures.

2.5 To read time⁵

2.5.1 MATHEMATICS

2.5.2 Bonny and Tommy visit the farm

2.5.3 EDUCATOR SECTION

2.5.4 Memorandum

- Number Concept to 600
- Operations:
- Addition – two and three digit numbers with and without regrouping of the ten.
- Subtraction – two and three digit numbers with and without regrouping of the ten.
- Multiplication – two digit number with a one digit number without regrouping the tens to 99.
- Division – two digit numbers divided by a one digit number without a remainder or regrouping the tens to 99.
- The $3 \times$ and $3 \div$ tables to the tenth multiple are taught. These conclude the tables to be learnt in Grade 3. Repetition and testing should be done regularly.
- The telling of time is very important. It is recommended that this be done classically as it requires much preparation and is immensely time consuming.

The learners each need a clock to handle and can construct one out of cardboard before the lesson.

In module 4 the number concept is extended to 600. Addition and subtraction calculations include two and three digit numbers. Multiplication and division calculations are done without regrouping of tens, and only up to 99.

In learning $3x$ and \div up to the 10th multiple, the tables that have to be mastered in Grade 3 are completed. Regular repetition and testing are vitally important from this stage on.

It is recommended that the **reading of time** be done with all the learners at the same time. Each learner must have a cardboard clock to use when the work is being done.

⁵This content is available online at <<http://cnx.org/content/m32263/1.1/>>.

Such a clock can be made from a paper plate, or the learners can be allowed to design their own clock for Technology. However, it must be ready before the reading of time is started in class. A great deal of practical exercise is necessary before the learners can complete the worksheets.

Number concept is now extended from 400 to 600 and the number blocks of hundreds, tens and units, as well as the flared cards, (attached to Module 2), must still be used to promote the number concept. Give special attention once again to the **100** that must be **regrouped** when 300 and 500 are halved: **$300 = 200 + 100$** **$500 = 400 + 100$**

Counting in **sixes** must be done incidentally and can also be repeated on the multiples chart (Module 2). Learners must know: **1 dozen = 12**.

Learners must have the opportunity, and be encouraged, to say what they can deduce from the graph, what can change and what will not change, before they have to write about it. Such a discussion will give you a good indication of what the learners understand and which aspects need more attention.

Learning $3x$ and \div must be done on the mat and with the use of concrete apparatus. The worksheets are only there to apply what has already been taught.

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This is enrichment work and if you find that it is too advanced, it can be done at a later stage. There may be learners who would like to accept the challenge.

Seeing that $3x$ and \div have just been done, it is easy to introduce **thirds** now. Give the learners loose paper shapes and allow them to fold and measure on their own, so that they can discover how it can be done. Some of the learners will know how to find **sixths** without any help. (Only enrichment)

The idea with the recipe is to make the learners understand that certain standard units and containers must be used, otherwise there is no chance of success with a recipe.

Let the learners mention more examples of the use of standard units in practice, e.g. petrol, milk, mixing medicines, prescriptions for administering medication, etc.

It is essential that all the different standard measuring containers and scales, as well as sand, water and objects used in measuring **volume** and **mass**, should be available in the classroom. Learners should be able to experiment every day with measuring and weighing, using standard units: **litres** and **millilitres** and **grams** and **milligrams**.

A bathroom scale is required to determine the mass of the learners.

Different methods are used for the multiplication and division calculations, but should you prefer another method and you find that the learners understand it better, it is their right to use the preferred method.

It is essential that many similar examples of the relevant number sentences be done orally before the learners are expected to complete this worksheet.

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A discussion on what they will see as they approach the farmstead by road is necessary before the learners will be able to draw it.

2.5.5 LEARNER SECTION

2.5.6 Content

2.5.6.1 ACTIVITY: To read time [LO 4.1, LO 4.2]

- **Bonny and Tommy** each got a watch for their birthday. Take a paper plate or cut a circle from cardboard and design your own clock (watch) from which you can tell the time.

Remember::

- 1 day = 24 hours
- 1 hour = 60 minutes
- 1 minute = 60 seconds

Hours: When the **long hand** is on the 12 and the **short hand is exactly on a number**, the clock indicates **hours**. Set your "clock" to match these below:



six o'clock



nine o'clock

Figure 2.25



•

Figure 2.26

What is the time?

- Draw the long and the short hands on the clocks



Figure 2.27

- **Bonny and Tommy** went to play at a friend's house at two o'clock, and they returned home at five o'clock. How many hours had they been away from home?

They had been away for _____ hours.

- **An hour** can be divided into **2 half-hours**

1 hour = 60 minutes

half-hour = 30 minutes

Half-hours: If the **long hand** is on the **6** and the **short hand** is **halfway between two numbers**, it indicates **half-hours**. Set your "clock" to match these below.



half past one



half past eight

Figure 2.28

- What is the time?



Figure 2.29

- Draw the long and the short hands on the clocks:



Figure 2.30

- **Bonny and Tommy** each does 8 sums in half an hour. How many sums will they do altogether in 1 hour?

They will do _____

- Mother drives 50 km in half an hour. How far will she drive in $2\frac{1}{2}$ hours?

She will drive _____

- How many half-hours are there in 4 hours? 4 hours = _____ half-hours
- **An hour** can be divided into **4 quarters**. Then you have **4 quarters of an hour**.

1 hour = 60 minutes

half-hour = 30 minutes

quarter-hour = 15 minute

Quarter-hours: If the **long hand** is on the **3** and the **short hand** is just **past** a number, it indicates that it is **quarter past**. If the **long hand** is on the **9** and the **short hand** is just **before** a number, it indicates that it is **quarter to**. Set your "clock" to match these below.



quarter to 5



quarter past 11

Figure 2.31

- What is the time

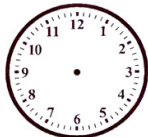


Figure 2.32

- Draw the long and the short hands on these clocks::



quarter past 2



quarter to 12



quarter past 9

Figure 2.33

- Complete the table:

quarter-hours	1	2	3	4	5	6	7	8
minutes	15	30						

Table 2.24

The **long hand** is sometimes called the **minute hand**, because it always indicates how many minutes have passed since the beginning of a new hour. It takes 5 minutes to move from one number to the next and 60 minutes (1 hour) to move right around. Set your "clock" to match these below.



5 past 6



10 to 4

Figure 2.34

- What is the time?



Figure 2.35

- Draw the long and the short hands on the clocks::



10 past 3



10 to 1



25 past 12

Figure 2.36

- Mother went to the shop at 3 o'clock and returned home by 20 past 4. For how long had she been away?

She had been away for _____

- It takes Bonny 5 minutes to read 3 pages of her book. How many pages can she read in 1 hour?

She can read _____

- Father entered the bank at 5 past 2 and came out 45 minutes later. At what time did he come out?

It was _____

2.5.7 Assessment

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.1: We know this when the learner reads and writes analogue and digital clock time in terms of hours, half-hours, quarters of an hour and minutes;

Assessment Standard 4.2: We know this when the learner solves problems involving calculations with and conversions.

2.6 To measure⁶

2.6.1 MATHEMATICS

2.6.2 Bonny and Tommy visit the farm

2.6.3 EDUCATOR SECTION

2.6.4 Memorandum

- Number Concept to 600
- Operations:
 - Addition – two and three digit numbers with and without regrouping of the ten.
 - Subtraction – two and three digit numbers with and without regrouping of the ten.
 - Multiplication – two digit number with a one digit number without regrouping the tens to 99.
 - Division – two digit numbers divided by a one digit number without a remainder or regrouping the tens to 99.
- The $3\times$ and $3\div$ tables to the tenth multiple are taught. These conclude the tables to be learnt in Grade 3. Repetition and testing should be done regularly.
- The telling of time is very important. It is recommended that this be done classically as it requires much preparation and is immensely time consuming.

The learners each need a clock to handle and can construct one out of cardboard before the lesson.

In module 4 the number concept is extended to 600. Addition and subtraction calculations include two and three digit numbers. Multiplication and division calculations are done without regrouping of tens, and only up to 99.

In learning $3x$ and \div up to the 10th multiple, the tables that have to be mastered in Grade 3 are completed. Regular repetition and testing are vitally important from this stage on.

It is recommended that the **reading of time** be done with all the learners at the same time. Each learner must have a cardboard clock to use when the work is being done.

⁶This content is available online at <<http://cnx.org/content/m32264/1.1/>>.

Such a clock can be made from a paper plate, or the learners can be allowed to design their own clock for Technology. However, it must be ready before the reading of time is started in class. A great deal of practical exercise is necessary before the learners can complete the worksheets.

Number concept is now extended from 400 to 600 and the number blocks of hundreds, tens and units, as well as the flared cards, (attached to Module 2), must still be used to promote the number concept. Give special attention once again to the **100** that must be **regrouped** when 300 and 500 are halved: **$300 = 200 + 100$** **$500 = 400 + 100$**

Counting in **sixes** must be done incidentally and can also be repeated on the multiples chart (Module 2). Learners must know: **$1 \text{ dozen} = 12$** .

Learners must have the opportunity, and be encouraged, to say what they can deduce from the graph, what can change and what will not change, before they have to write about it. Such a discussion will give you a good indication of what the learners understand and which aspects need more attention.

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A discussion on what they will see as they approach the farmstead by road is necessary before the learners will be able to draw it.

2.6.5 LEANER SECTION

2.6.6 Content

2.6.6.1 ACTIVITY: To measure [LO 1.1, LO 1.4, LO 1.11, LO 4.5]

In order to measure **accurately**, we have to make use of **standard units**. Shorter lengths are measured in **centimetres** and **millimetres**. We can use a ruler to do this. **10mm = 1 cm**

Longer lengths are measured in **metres** and for this we can use a metre stick, a tape measure or a trundle wheel. **100cm = 1 m**

.metre	1	2	3	4	5	6	7	8	9
centimetre	100								

Table 2.25



Figure 2.37

Use your ruler and measure the lengths:

- Use your **ruler** and draw a line **14cm long**. Now **halve** it.
- Draw a line **12cm** long and divide it into **4 quarters**.
- Use the **metre stick** to measure two objects in the classroom that are longer than your ruler but shorter than the metre stick. **Estimate first**.

Object	Estimated	Measured	Too much or too little

Table 2.26

- Use the **tape measure** to measure the height of two of your friends. **Estimate first**.

Object	Estimated	Measured	Too much or too little

Table 2.27

- Use the **trundle wheel** to measure the length of the stoep or the corridor.
- **Measure it.** It is _____ long.
- I was wrong by _____
- **Tommy** is going to help Grandpa to make a new camp for Granny's chickens. The new camp will be rectangular - 50m long and 30m wide.
- Measure the length of the 4 sides of this rectangle.

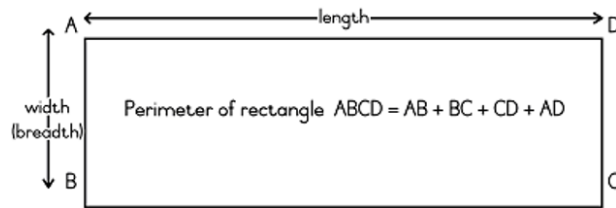


Figure 2.38

AD = _____
 AB = _____
 BC = _____
 CD = _____

We discover: AD = BC and AB = CD

The two opposite sides of a rectangle are of the same length .

Thus: 2 times the length plus 2 times the width (breadth) is equal to the perimeter of the rectangle. (2 x l) + (2 x b) = perimeter

This is how we write it: $2l + 2b = \text{perimeter}$

- 2 times the length is _____ cm and 2 times the width is _____ cm.
- The perimeter of the rectangle is _____ cm.

Now Bonny and Tommy know how to calculate what length of wire netting is needed to make the camp. They only have to calculate the perimeter of the camp.

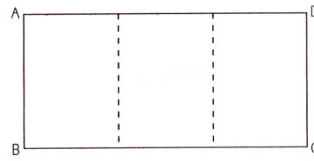
- 2 times the length is _____ m and 2 times the width is _____ m.
- $2l + 2b = \text{perimeter}$

_____ + _____ =

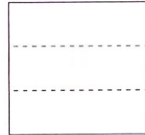
- The perimeter of the camp is _____ m.
- The camp will have a wooden gate that is 1m in width. Thus Grandpa has to buy only _____ m wire netting.

- The rectangle has been divided into **three equal parts**. Colour in **1** of the **3** parts.

Which **part** of the rectangle has been coloured in? (one third)



Colour in **two thirds** ($\frac{2}{3}$) of the **square**.



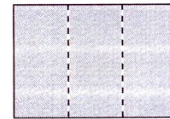
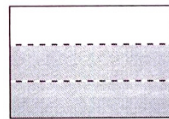
Which **part** of each shape has been coloured in?



.....

.....

.....



.....

.....

.....

Who wants to try?

$$\frac{1}{3} + \frac{1}{3} = \text{.....} \quad 1\frac{1}{3} + 1\frac{1}{3} = \text{.....} \quad 2\frac{1}{2} + \frac{1}{4} = \text{.....}$$

Complete the number line.

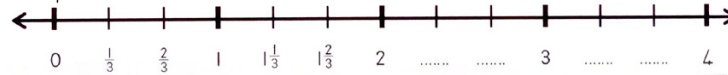


Figure 2.39

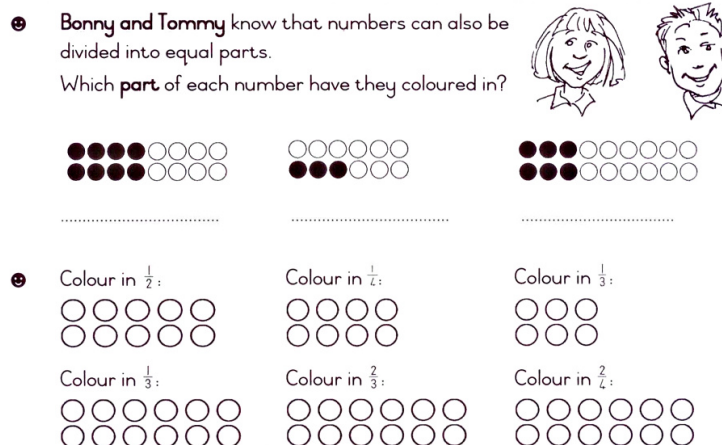


Figure 2.40

- Show how you will solve the problems. You may draw.

Granny baked 24 cookies. Bonny and Tommy ate $\frac{1}{4}$ of them.

How many cookies are left?

There are

- Bonny and Tommy each got R12 from Grandpa. Bonny spent $\frac{1}{2}$

$\frac{1}{2}$

Figure 2.41

of her money and Tommy spent $\frac{1}{3}$ of his. Who spent more?

..... spent more.

- Tommy is 1m 37cm tall and Freddie is 1m 43cm. What is the difference between their lengths?

The difference is

- Grandpa buys a rope that is 16m long. How many 2m-pieces can he cut from it?

He can cut

2.6.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers;

Assessment Standard 1.11: We know this when the learner explains own solutions to problems;

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment 4.5: We know this when the learner estimates, measures, compares and orders three-dimensional objects using non-standard and standard measures.

2.7 Mass⁷

2.7.1 MATHEMATICS

2.7.2 Bonny and Tommy visit the farm

2.7.3 EDUCATOR SECTION

2.7.4 Memorandum

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- Operations:
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Counting in **sixes** must be done incidentally and can also be repeated on the multiples chart (Module 2). Learners must know: **$1 \text{ dozen} = 12$** .

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2.7.5 LEARNER SECTION

2.7.6 Content

2.7.6.1 ACTIVITY: Mass [LO 1.8, LO 1.9, LO 2.2, LO 4.5]

- **Bonny** and **Granny** want to make some pancakes. If they want the pancakes to be a success, they have to measure the ingredients **accurately**.

Dry ingredients such as flour and sugar are measured in **grams** and **kilograms**. A standard measuring cup and standard measuring spoons are used. You may use a kitchen scale to weigh the ingredients. **Remember:** $1\ 000\ \text{g} = 1\ \text{kg}$

Liquids such as oil, milk and water are measured in **millilitres** and **litres**, and a standard measuring jug and measuring spoons are used. **Remember:** $1\ 000\ \text{mℓ} = 1\ \ell$

- Here is their recipe. Why don't you try it out at school or at home

Ingredients:

- 4 cups (544g) cake flour
- 4 eggs
- 1 cup (250mℓ) oil
- 1 t (5mℓ) salt
- $\frac{1}{4}$ cup (63mℓ) vinegar
- 1ℓ water
- 4 t. (20mℓ) baking powder

Method:

1. Beat the eggs, oil, vinegar and a little of the water very well.
 2. Sift the flour and the salt together.
 3. Add the flour and the rest of the water little by little to the egg mixture and whisk it thoroughly.
 4. Lastly, add the baking powder.
 5. Heat a lightly oiled pan. Pour a small quantity of the batter into the pan. Turn it over to brown the pancake on both sides.
 6. Turn it out onto a plate, sprinkle with cinnamon sugar, and roll it. This recipe makes **60** pancakes.
- How many pancakes are there for each learner if there are 30 learners in the class? There are

Calculate the ingredients you will need if you want to double the recipe:

----- cake flour
----- eggs
----- water
----- oil
----- baking powder
----- salt

Estimate which **5** learners in your class have the **smallest mass**, write their names in the table and ask your educator to weigh them.

Name	Estimated mass	Weighed mass	Too much or too little

Table 2.28

- Who of the 5 learners have the **greatest mass**? -----
 - Who of the 5 learners have the **smallest mass**? -----
 - What is the **difference** between the two masses? -----
 - What is the **total mass** of the 5 learners? -----
-
- Find the mass of the following objects, but first estimate whether it is more or less than 1 kg:

Object(s)	More/less than 1 kg	Weighed	Right/wrong
Your shoes			
School bag			
Lunch box			
A brick			
10 books			

Table 2.29

- Calculate the total mass of each of the following. Mother buys:

3 x 2 kg rice _____
 5 x 10 kg potatoes _____
 6 x 100 g jelly _____
 4 x 150 g sweets _____
 2 x 500 g margarine _____

1. Think!

2 x 7 = _____ 9 x 2 = _____ 16 ÷ 2 = _____
 5 x 5 = _____ 10 x 3 = _____ 9 ÷ 3 = _____
 3 x 9 = _____ 8 x 4 = _____ 20 ÷ 5 = _____
 10 x 7 = _____ 6 x 10 = _____ 12 ÷ 4 = _____
 4 x 6 = _____ 5 x 2 = _____ 24 ÷ 3 = _____
 2 x 8 = _____ 7 x 4 = _____ 10 ÷ 2 = _____
 5 x 6 = _____ 6 x 2 = _____ 40 ÷ 10 = _____
 10 x 8 = _____ 9 x 4 = _____ 5 ÷ 5 = _____
 3 x 0 = _____ 4 x 5 = _____ 16 ÷ 4 = _____
 4 x 7 = _____ 6 x 3 = _____ 21 ÷ 3 = _____
 2 x 9 = _____ 7 x 5 = _____ 14 ÷ 2 = _____
 10 x 10 = _____ 4 x 4 = _____ 36 ÷ 4 = _____
 5 x 3 = _____ 5 x 10 = _____ 27 ÷ 3 = _____
 3 x 8 = _____ 6 x 5 = _____ 4 ÷ 2 = _____
 4 x 9 = _____ 3 x 2 = _____ 45 ÷ 5 = _____
 10 x 1 = _____ 8 x 5 = _____ 90 ÷ 10 = _____
 2 x 5 = _____ 3 x 3 = _____ 30 ÷ 5 = _____

2. Look at the pattern that Bonny and Tommy have discovered. Complete it:

1 x 2 = 2 10 x 2 = 20 100 x 2 = 200
 1 x 3 = _____ 10 x 3 = _____ 100 x 3 = _____
 1 x 4 = _____ 10 x 4 = _____ 100 x 4 = _____
 1 x 5 = _____ 10 x 5 = _____ 100 x 5 = _____
 1 x 6 = _____ 10 x 6 = _____ 100 x 6 = _____
 2 x 1 = _____ 20 x 1 = _____ 200 x 1 = _____
 2 x 2 = _____ 20 x 2 = _____ 200 x 2 = _____
 2 x 3 = _____ 20 x 3 = _____ 200 x 3 = _____
 2 x 4 = _____ 20 x 4 = _____ 200 x 4 = _____
 2 x 5 = _____ 20 x 5 = _____ 200 x 5 = _____
 3 x 1 = _____ 30 x 1 = _____ 300 x 1 = _____
 3 x 2 = _____ 30 x 2 = _____ 300 x 2 = _____
 3 x 3 = _____ 30 x 3 = _____ 300 x 3 = _____

$$\begin{array}{lll}
 4 \times 1 = ______ & 40 \times 1 = ______ & 400 \times 1 = ______ \\
 4 \times 2 = ______ & 40 \times 2 = ______ & 400 \times 2 = ______ \\
 5 \times 1 = ______ & 50 \times 1 = ______ & 500 \times 1 = ______ \\
 5 \times 2 = ______ & 50 \times 2 = ______ & 500 \times 2 = ______
 \end{array}$$

- Let us see how **Bonny and Tommy** have solved this problem.

Granny baked some cookies and packed them into **3** tins. There are **23** cookies in each tin. How many **cookies** did she bake altogether?

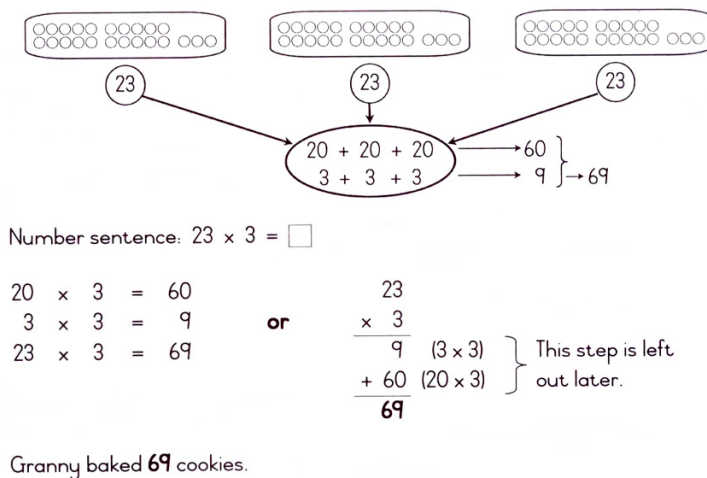


Figure 2.42

- Try to solve this problem in the same way.

Grandpa planted **4** rows of trees. There are **12** trees in each row. How many **trees** did he plant altogether?



Figure 2.43

- Do the calculations and use the method you like best: $44 \times 2 =$

$$\begin{array}{l}
 32 \times 3 = \\
 21 \times 4 = \\
 11 \times 5 =
 \end{array}$$

- Use your own method to solve the problems. Show how you do it:

The past 4 days Granny collected 22 eggs from the nests every day. How many eggs did she collect altogether?

- She collected _____

On Monday Granny and Bonny baked 120 cookies. On Tuesday they baked 48 and on Wednesday another 100. How many cookies did they bake altogether?

- They baked _____

2.7.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.2: We know this when the learner copies and extends simple number sequences to at least 1 000;

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.5: We know this when the learner estimates, measures, compares and orders three-dimensional objects using non-standard and standard measures.

2.8 Number sentence⁸

2.8.1 MATHEMATICS

2.8.2 Bonny and Tommy visit the farm

2.8.3 EDUCATOR SECTION

2.8.4 Memorandum

- Number Concept to 600
- Operations:
- Addition – two and three digit numbers with and without regrouping of the ten.
- Subtraction – two and three digit numbers with and without regrouping of the ten.
- Multiplication – two digit number with a one digit number without regrouping the tens to 99.
- Division – two digit numbers divided by a one digit number without a remainder or regrouping the tens to 99.
- The $3 \times$ and $3 \div$ tables to the tenth multiple are taught. These conclude the tables to be learnt in Grade 3. Repetition and testing should be done regularly.
- The telling of time is very important. It is recommended that this be done classically as it requires much preparation and is immensely time consuming.

⁸This content is available online at <<http://cnx.org/content/m32268/1.1/>>.

The learners each need a clock to handle and can construct one out of cardboard before the lesson.

In module 4 the number concept is extended to 600. Addition and subtraction calculations include two and three digit numbers. Multiplication and division calculations are done without regrouping of tens, and only up to 99.

In learning $3x$ and \div up to the 10th multiple, the tables that have to be mastered in Grade 3 are completed. Regular repetition and testing are vitally important from this stage on.

It is recommended that the **reading of time** be done with all the learners at the same time. Each learner must have a cardboard clock to use when the work is being done.

Such a clock can be made from a paper plate, or the learners can be allowed to design their own clock for Technology. However, it must be ready before the reading of time is started in class. A great deal of practical exercise is necessary before the learners can complete the worksheets.

Number concept is now extended from 400 to 600 and the number blocks of hundreds, tens and units, as well as the flared cards, (attached to Module 2), must still be used to promote the number concept. Give special attention once again to the **100** that must be **regrouped** when 300 and 500 are halved: **$300 = 200 + 100$** **$500 = 400 + 100$**

Counting in **sixes** must be done incidentally and can also be repeated on the multiples chart (Module 2). Learners must know: **1 dozen = 12**.

Learners must have the opportunity, and be encouraged, to say what they can deduce from the graph, what can change and what will not change, before they have to write about it. Such a discussion will give you a good indication of what the learners understand and which aspects need more attention.

Learning $3x$ and \div must be done on the mat and with the use of concrete apparatus. The worksheets are only there to apply what has already been taught.

Learners must get the opportunity in class, on a daily basis if possible, to take measurements with the ruler, the metre stick and the trundle wheel. The more practice they get, the more **accurately** they will measure. However, always encourage them to **estimate** first.

This is enrichment work and if you find that it is too advanced, it can be done at a later stage. There may be learners who would like to accept the challenge.

Seeing that $3x$ and \div have just been done, it is easy to introduce **thirds** now. Give the learners loose paper shapes and allow them to fold and measure on their own, so that they can discover how it can be done. Some of the learners will know how to find **sixths** without any help. (Only enrichment)

The idea with the recipe is to make the learners understand that certain standard units and containers must be used, otherwise there is no chance of success with a recipe.

Let the learners mention more examples of the use of standard units in practice, e.g. petrol, milk, mixing medicines, prescriptions for administering medication, etc.

It is essential that all the different standard measuring containers and scales, as well as sand, water and objects used in measuring **volume** and **mass**, should be available in the classroom. Learners should be able to experiment every day with measuring and weighing, using standard units: **litres** and **millilitres** and **grams** and **milligrams**.

A bathroom scale is required to determine the mass of the learners.

Different methods are used for the multiplication and division calculations, but should you prefer another method and you find that the learners understand it better, it is their right to use the preferred method.

It is essential that many similar examples of the relevant number sentences be done orally before the learners are expected to complete this worksheet.

The **regrouping** of a hundred when adding or subtracting is now formally taught. Sufficient concrete work must be done beforehand. More advanced work where a ten and a hundred are regrouped simultaneously, should not be done at the same time. It will depend on the abilities of the group whether it should be done immediately hereafter or at a much later stage.

Whether the learners will be allowed to make use of carried numbers, remains the decision of the educator. e.g.

Learners will need a blank sheet of paper in order to calculate the shortest route. Some learners may find it difficult and may want to give up, but with a little help they should be able to do it.

A discussion on what they will see as they approach the farmstead by road is necessary before the learners will be able to draw it.

2.8.5 LEARNER SECTION

2.8.6 Content

2.8.6.1 ACTIVITY: Number sentence [LO 1.8, LO 1.10, LO 2.2, LO 3.5]

1. These patterns can help you to work with larger numbers. Complete.

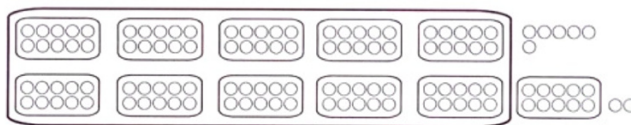
$2 \div 1 = 2$	$20 \div 1 = 20$	$200 \div 1 = 200$
$3 \div 1 = 3$	$30 \div 1 = 30$	$300 \div 1 = 300$
$4 \div 1 = \underline{\hspace{1cm}}$	$40 \div 1 = \underline{\hspace{1cm}}$	$400 \div 1 = \underline{\hspace{1cm}}$
$5 \div 1 = \underline{\hspace{1cm}}$	$50 \div 1 = \underline{\hspace{1cm}}$	$500 \div 1 = \underline{\hspace{1cm}}$
$6 \div 1 = \underline{\hspace{1cm}}$	$60 \div 1 = \underline{\hspace{1cm}}$	$600 \div 1 = \underline{\hspace{1cm}}$
$2 \div 2 = 1$	$20 \div 2 = 10$	$200 \div 2 = 100$
$4 \div 2 = \underline{\hspace{1cm}}$	$40 \div 2 = \underline{\hspace{1cm}}$	$400 \div 2 = \underline{\hspace{1cm}}$
$6 \div 2 = \underline{\hspace{1cm}}$	$60 \div 2 = \underline{\hspace{1cm}}$	$600 \div 2 = \underline{\hspace{1cm}}$
$8 \div 2 = \underline{\hspace{1cm}}$	$80 \div 2 = \underline{\hspace{1cm}}$	$800 \div 2 = \underline{\hspace{1cm}}$
$10 \div 2 = \underline{\hspace{1cm}}$	$100 \div 2 = \underline{\hspace{1cm}}$	$1000 \div 2 = \underline{\hspace{1cm}}$
$3 \div 3 = 1$	$30 \div 3 = 10$	$300 \div 3 = 100$
$6 \div 3 = \underline{\hspace{1cm}}$	$60 \div 3 = \underline{\hspace{1cm}}$	$600 \div 3 = \underline{\hspace{1cm}}$
$9 \div 3 = \underline{\hspace{1cm}}$	$90 \div 3 = \underline{\hspace{1cm}}$	$900 \div 3 = \underline{\hspace{1cm}}$
$4 \div 4 = \underline{\hspace{1cm}}$	$40 \div 4 = \underline{\hspace{1cm}}$	$400 \div 4 = \underline{\hspace{1cm}}$
$8 \div 4 = \underline{\hspace{1cm}}$	$80 \div 4 = \underline{\hspace{1cm}}$	$800 \div 4 = \underline{\hspace{1cm}}$
$5 \div 5 = \underline{\hspace{1cm}}$	$50 \div 5 = \underline{\hspace{1cm}}$	$500 \div 5 = \underline{\hspace{1cm}}$
$10 \div 5 = \underline{\hspace{1cm}}$	$100 \div 5 = \underline{\hspace{1cm}}$	$1000 \div 5 = \underline{\hspace{1cm}}$

Figure 2.44

1. 2. See how **Bonny and Tommy** solved this problem for Grandpa:

Grandpa has 48 pigs on the farm and there are 4 pigsties. How many pigs must he put in each sty?

Number sentence: $48 \div 4 = \underline{\hspace{2cm}}$



Bonny did her calculations as follows:

$$50 + 60 = 110$$

$$6 + 2 = 8$$

$$56 + 62 = 118$$

Tommy did his as follows:

$$\begin{array}{r} 56 \\ + 62 \\ \hline 118 \end{array}$$

$$56 + 62 = 118$$

Figure 2.46

- Use the method you like best to do these calculations:

$$73 + 55 = \underline{\hspace{2cm}}$$

$$46 + 63 = \underline{\hspace{2cm}}$$

$$94 + 23 = \underline{\hspace{2cm}}$$

- **Bonny and Tommy** have also discovered that they sometimes don't have enough tens to take away and that they then have to **regroup a hundred**.

$$\text{Number sentence: } 126 - 32 = \underline{\hspace{2cm}}$$

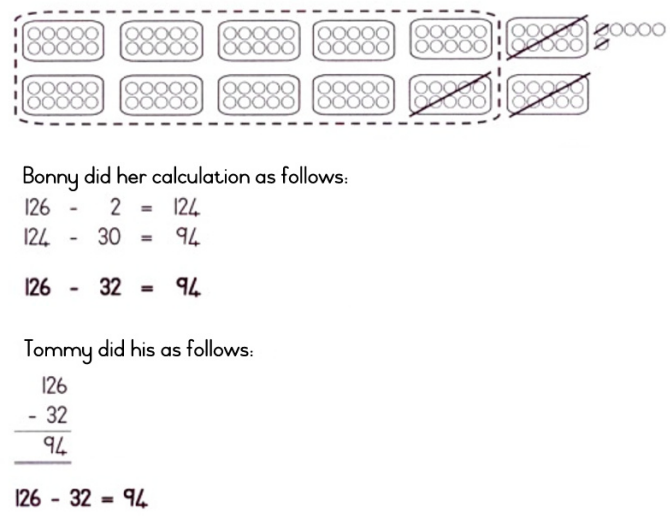


Figure 2.47

- Use the method you like best to do these calculations:

1 $18 - 25 =$ _____
 $150 - 60 =$ _____
 $147 - 60 =$ _____

- Fill in the answers:

$\begin{array}{r} 54 \\ + 65 \\ \hline \end{array}$	$\begin{array}{r} 63 \\ + 74 \\ \hline \end{array}$	$\begin{array}{r} 35 \\ + 92 \\ \hline \end{array}$	$\begin{array}{r} 52 \\ + 81 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ + 44 \\ \hline \end{array}$	$\begin{array}{r} 47 \\ + 91 \\ \hline \end{array}$
$\begin{array}{r} 66 \\ + 54 \\ \hline \end{array}$	$\begin{array}{r} 39 \\ + 65 \\ \hline \end{array}$	$\begin{array}{r} 58 \\ + 85 \\ \hline \end{array}$	$\begin{array}{r} 37 \\ + 63 \\ \hline \end{array}$	$\begin{array}{r} 75 \\ + 45 \\ \hline \end{array}$	$\begin{array}{r} 83 \\ + 38 \\ \hline \end{array}$
$\begin{array}{r} 120 \\ - 30 \\ \hline \end{array}$	$\begin{array}{r} 130 \\ - 50 \\ \hline \end{array}$	$\begin{array}{r} 110 \\ - 60 \\ \hline \end{array}$	$\begin{array}{r} 129 \\ - 34 \\ \hline \end{array}$	$\begin{array}{r} 137 \\ - 45 \\ \hline \end{array}$	$\begin{array}{r} 118 \\ - 22 \\ \hline \end{array}$

Figure 2.48

- Complete the number path:

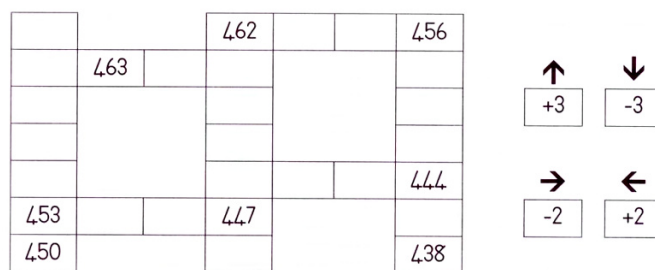


Figure 2.49

-
- Fill in the missing numbers:

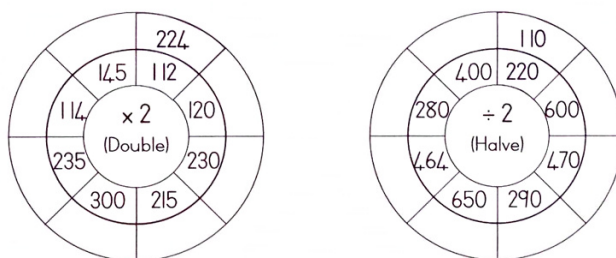


Figure 2.50

-
- Here is a road map for Dad. There are different roads he can take to get to the farm, but which one is the shortest?
 - Calculate the shortest road and draw it on the map.

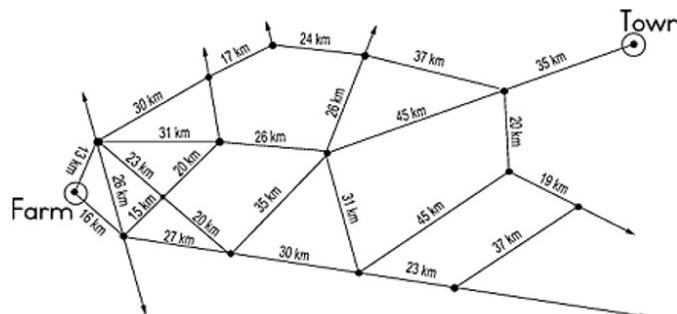


Figure 2.51

- How long is the shortest road (in km)? _____

- If Dad drives 100 km in one hour, how long will it take him to get there?

It will _____

- Draw a farm and a house for Grandpa and Granny, as you will see it when you approach the farm.

2.8.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

- 1.10.1 building up and breaking down numbers;
- 1.10.2 doubling and halving;
- 1.10.3 number-lines;
- 1.10.4 rounding off in tens.

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.2: We know this when the learner copies and extends simple number sequences to at least 1 000;

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

Assessment Standard 3.5: We know this when the learner recognises and describes three-dimensional objects from different positions.

Chapter 3

Term 3

3.1 Distance¹

3.1.1 MATHEMATICS

3.1.2 Bonny and Tommy are road users too

3.1.3 EDUCATOR SECTION

3.1.4 Memorandum

- Number Concept to 800
- Operations:
- Addition – two and three digit numbers with regrouping (carrying) of the tens or hundreds.
- Subtraction – two and three digit numbers with regrouping (decomposition) of the tens or hundreds.
- Multiplication – two digit numbers with a one digit number with regrouping (carrying) of the tens.
- Division – with a remainder in the range of the tables.
- two digit numbers with a one digit number without regrouping of the tens to 99.

Division with a remainder but without the regrouping (decomposition) of the tens is taught. This demands much work in the range of the tables. The learners need to understand this stage very well before they work with higher numbers. **Testing of the tables is essential.**

In Module 5, the **number concept** is expanded to **800**. In addition and subtraction, two- and three-digit numbers are introduced. Multiplication is done with regrouping of tens. Division with a remainder, but without regrouping or breaking up of tens, is taught. Initially it is only done in the number range of the tables. The learners need to have a very good understanding of this before it can be extended to larger numbers. Testing of tables remains extremely important.

Here the learners are exposed to other ways of summarising data. An oral discussion of possible changes and the results thereof is necessary.

Ensure that the learners realise that they need to cover the distance between the school and their homes at least twice daily: They come to school and have to go home again.

The learners need to find out what the distance between home and school is before they do the work on this page.

This is the first Grade 3 Module to expose learners to determining particular points on a graph so that they can draw the graph, and for working with 2 sets of data on the same graph. You therefore need to be doubly sure that they understand how this is done. Easier examples could be discussed in preparation for the exercise.

¹This content is available online at <<http://cnx.org/content/m32271/1.1/>>.

Precede this with a discussion on what a bus looks like from the **front** and from the **rear** before you let the learners attempt the drawings.

Counting in 8's must be done before the table at the bottom of this page is completed.

Learners must discover the relationship (pattern). There are similar patterns on p. 11.

This worksheet is simply aimed at determining the level of thinking involved with operations requiring addition and subtraction and finding out where special attention is required. The work sheet does not have to be completed in one session.

Concrete work is necessary to explain the regrouping of tens during multiplication.

Ensure that the learners understand the patterns where division is involved before expecting them to complete the exercises.

Here we deal with **division with a remainder**. Explain that it is sometimes impossible to **divide the remainder** into fractions, simply because of the nature of the problem.

E.g. 1 fried or boiled egg can be divided but 1 uncooked egg cannot be divided and shared.

This is written as the **remainder (rem.)**.

Begin with work in the number range of the tables (to tenth multiple). You will need much concrete work and lots of repetition, because it is very important that the learners understand what they are doing before you go on to larger numbers.

The learners must do research in books and pamphlets about the different traffic signs and discuss them before they complete the signs.

Many pictures and different objects with these shapes are required to ensure that the learners recognise all the shapes.

Make the learners aware of the fact that there is no easy way of folding or dividing for obtaining **fifths** of 2-D shapes. This must be determined by **measuring**.

It may be necessary to help the learners to determine the location of the first square that must be coloured in. Do not offer help if they are able to find it independently.

Encourage learners to tell where they live and how they would explain the route to their home to someone else. Help them to explain an easy route to find a certain room in the school.

3.1.5 LEARNER SECTION

3.1.6 Content

3.1.6.1 ACTIVITY: Distance [LO 1.1, LO 1.3, LO 1.4, LO 1.8, LO 1.9, LO 1.10, LO 3.5, LO 5.1, LO 5.2, LO 5.3, LO 5.4, LO 5.5]

All of us are **road users**: pedestrians, cyclists, drivers of vehicles, or passengers. It is important to know and obey traffic rules and road signs.

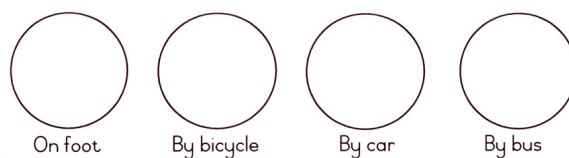


Figure 3.1

Find out how each of the learners in your class gets to school in the morning. Place a dot in the relevant circle for each of the learners.

Use this information to complete the following sentences.

Most of the learners come _____
 The fewest learners come _____

- Write down **3 things** that could happen to **change** the information that you have gathered.

- Suppose that all the learners in your class came to school by bicycle.

How many bicycles would there be? _____ bicycles.
 How many wheels would there be? _____ wheels.

- There are 10 bicycle racks outside the school building and 25 bicycles are parked in each bicycle rack.
 How many bicycles are there altogether? _____ bicycles.

How many wheels are there in altogether? _____ wheels.

Suppose that there are only 13 bicycles in 1 of the bicycle racks. How many bicycles and wheels would there be in all? _____ bicycles and _____ wheels.

Bonny and **Tommy** live **500 m** from the school and walk to and from school every day. They cross the street at the scholar patrol.

- How far do they walk each day?

They walk _____

- How far do they walk in 4 weeks?

They walk _____

- This morning 418 feet crossed the street at the scholar patrol. How many learners crossed over at the zebra lines? _____ learners.

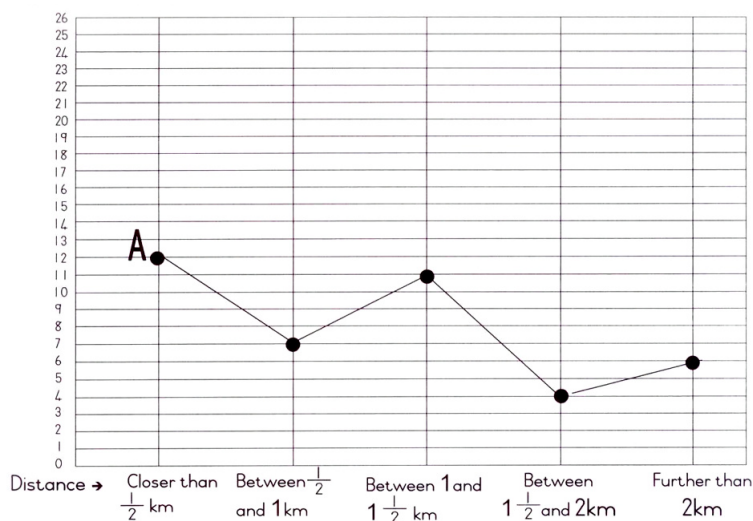
- Find out:

1. How far from the school is your home?
2. How far do you walk or ride each day?
3. How far do you walk or ride in one school week?
4. How far away is the learner who lives furthest from the school?
5. How far away is the learner who lives nearest to the school?
6. Calculate the difference between the two distances:

- Ask your educator to help you to summarise the information:

----- learners living closer than $\frac{1}{2}$ km.
 ----- learners living between $\frac{1}{2}$ and 1 km from the school.
 ----- learners living between 1 and $1\frac{1}{2}$ km from the school.
 ----- learners further than $1\frac{1}{2}$ and 2 km from the school.
 ----- learners further than 2 km from the school.

Here is a graph showing the distances for the learners in the twins' class. Their graph is drawn in **black** and marked with an **A**. Record your own class' information on the same graph. Draw your graph using a **red** pencil and mark it with **B**.



Let's compare the 2 classes. Only fill in **A** or **B**.

- ☺ Who has more learners living closer than $\frac{1}{2}$ km?
- ☺ Who has more learners living between $\frac{1}{2}$ and 1 km away?
- ☺ Who has more learners living between 1 and $1\frac{1}{2}$ km away?
- ☺ Who has more learners living between $1\frac{1}{2}$ and 2 km away?
- ☺ Who has more learners living further than 2 km away?
- ☺ Who has more learners in all?

Figure 3.2

Bonny and **Tommy** are very excited, because Grades 3, 4 and 5 are going on a netball and rugby tour. This is the bus in which they will travel.

- Copy it in the blocks that are provided.

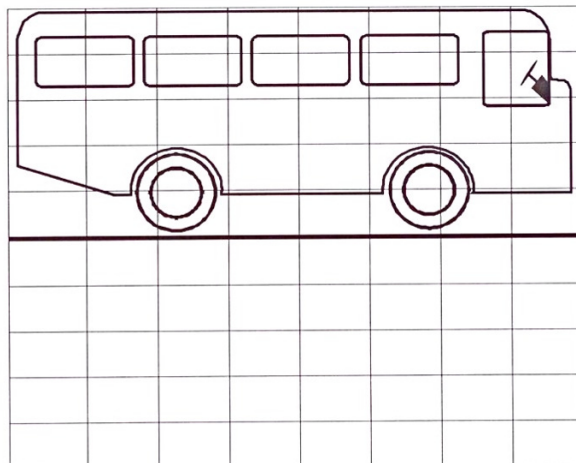


Figure 3.3

- Now draw the bus, first as you will see it from the front and then from the back.

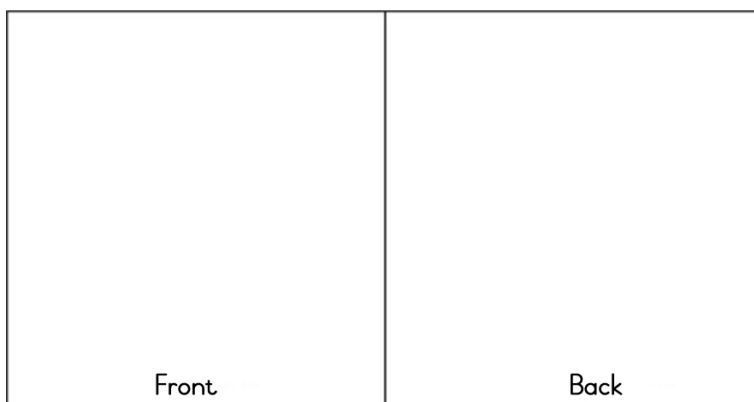


Figure 3.4

- Bring empty cartons and other scrap material to school to build your own bus.

Use your own method for solving the following problems.

- There will be 120 players and 8 coaches on the tour. Each bus may only transport 35 passengers. Draw the buses that will be needed to transport everyone.

- Divide the players and the coaches among the buses to place the same number of players and coaches in each bus. **Write the numbers on the buses you have drawn.** How many seats will be empty in each bus? _____
- A rugby team has 15 rugby players. How many players are there in the 5 rugby teams altogether? There are _____
- There are 7 netball players in a netball team. How many players are in the 5 netball teams altogether? There are _____
- The other players are the reserves. How many reserves are there? _____
- There are _____
- They leave on Thursday and will be away for 3 nights. On which day will they return? _____
- Each player has to contribute R100 to cover a portion of the costs. **Bonny** and **Tommy** will each take along R50 in pocket money.

What will the twins' parents have to pay, including the pocket money, to let them go on the tour? _____

Bonny and **Tommy** and all the other players enjoyed the tour thoroughly, but there are a couple of calculations to be done.

- Here is a representation of the route to help you with the calculations.

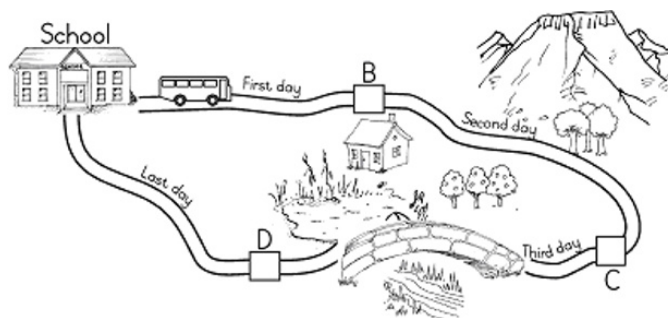


Figure 3.5

During the tour they travelled **400 km** altogether. On the first day they travelled **120 km**, on the second day they travelled **102 km** and **103 km** on the third day. How far did they travel on the last day to get back to the school?

- Number sentence: _____
- On the last day: _____

The cost of the fuel came to **R150** for each **100 km** that the bus travelled.

What was the price of the fuel for one bus for the whole bus tour?

- Number sentence: _____
- R _____

What was the total cost of the fuel for all the buses?

- R _____

- Suppose each bus travelled 80 km in an hour. Complete the table:

hours	1	2	3	4	5	6	7	8	9	10
km	80									

Table 3.1



Figure 3.6

- Make use of the number line and write the number halfway between:

100 300
 400 500
 150 250
 300 350
 250 300
 200 600
 700 800
 550 650
 400 450
 750 800

☺ Count the km in:									
100	|	100	.....	.....	.....	.....	.....	.....	800km
50	|	250	300	.....	.....	.....	.....	.....	600km
25	|	125	150	.....	.....	.....	.....	.....	300km

☺ Count backwards in:									
100	|	1000	900	.....	.....	.....	.....	.....	300km
50	|	450	400	.....	.....	.....	.....	.....	100km
25	|	175	150	.....	.....	.....	.....	.....	0km

☺ Count in tens :									
114	|	124	.....	.....	.....	.....	.....	.....	194
258	|	268	.....	.....	.....	.....	.....	.....	338
636	|	.....	.....	.....	.....	.....	.....	.....	716

☺ Count backwards in tens :									
281	|	271	.....	.....	.....	.....	.....	.....	201
355	|	345	.....	.....	.....	.....	.....	.....	275
643	|	.....	.....	.....	.....	.....	.....	.....	563

☺ Complete:									
691	|	693	.....	.....	.....	.....	.....	.....	707
724	|	729	.....	.....	.....	.....	.....	.....	764
800	|	798	.....	.....	.....	.....	.....	.....	784
720	|	716	.....	.....	.....	.....	.....	.....	688

Figure 3.7

-
- How quickly can you fill in all the answers?

$45 + 23 = \dots\dots\dots$	$63 + 15 = \dots\dots\dots$	$26 + 43 = \dots\dots\dots$	
$162 + 151 = \dots\dots\dots$	$106 + 150 = \dots\dots\dots$	$135 + 202 = \dots\dots\dots$	
$38 + 52 = \dots\dots\dots$	$56 + 16 = \dots\dots\dots$	$27 + 64 = \dots\dots\dots$	
$105 + 145 = \dots\dots\dots$	$203 + 109 = \dots\dots\dots$	$208 + 75 = \dots\dots\dots$	
$64 + 50 = \dots\dots\dots$	$74 + 35 = \dots\dots\dots$	$85 + 41 = \dots\dots\dots$	
$145 + 70 = \dots\dots\dots$	$250 + 158 = \dots\dots\dots$	$172 + 240 = \dots\dots\dots$	
$87 + 43 = \dots\dots\dots$	$56 + 56 = \dots\dots\dots$	$68 + 54 = \dots\dots\dots$	
$159 + 161 = \dots\dots\dots$	$246 + 155 = \dots\dots\dots$	$177 + 237 = \dots\dots\dots$	
$85 - 43 = \dots\dots\dots$	$68 - 40 = \dots\dots\dots$	$94 - 74 = \dots\dots\dots$	
$167 - 52 = \dots\dots\dots$	$287 - 150 = \dots\dots\dots$	$165 - 135 = \dots\dots\dots$	
$82 - 36 = \dots\dots\dots$	$90 - 27 = \dots\dots\dots$	$73 - 66 = \dots\dots\dots$	
$163 - 25 = \dots\dots\dots$	$280 - 116 = \dots\dots\dots$	$161 - 104 = \dots\dots\dots$	
$158 - 63 = \dots\dots\dots$	$140 - 70 = \dots\dots\dots$	$129 - 45 = \dots\dots\dots$	
$134 - 49 = \dots\dots\dots$	$150 - 64 = \dots\dots\dots$	$166 - 88 = \dots\dots\dots$	
$283 - 190 = \dots\dots\dots$	$370 - 182 = \dots\dots\dots$	$346 - 259 = \dots\dots\dots$	
145 $+ 124$	108 $+ 190$	170 $+ 300$	200 $+ 178$
158 $+ 122$	105 $+ 206$	188 $+ 129$	149 $+ 276$
179 $- 123$	264 $- 145$	360 $- 107$	450 $- 146$
320 $- 150$	404 $- 132$	233 $- 165$	400 $- 126$

Figure 3.8

- Write down all the **3-digit numbers** that you can make with the numbers 3, 7 and 8.

- Arrange the numbers from **the most to the least** and circle the **uneven** numbers.

- Write the **uneven numbers** with their number names.

- Round off the **even** numbers to the **nearest ten**.

-
- Halve the rounded off numbers.
-

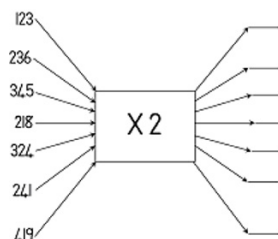


Figure 3.9

Think!

$10 \times 5 =$	$3 \times 4 =$	$6 \times 5 =$	$9 \times 2 =$
$7 \times 2 =$	$5 \times 0 =$	$8 \times 4 =$	$3 \times 7 =$
$9 \times 4 =$	$2 \times 2 =$	$10 \times 1 =$	$5 \times 5 =$
$3 \times 6 =$	$4 \times 10 =$	$7 \times 5 =$	$8 \times 3 =$
$10 \times 10 =$	$1 \times 8 =$	$9 \times 3 =$	$2 \times 8 =$
$8 \times 5 =$	$10 \times 7 =$	$6 \times 2 =$	$4 \times 4 =$
$1 \times 7 =$	$3 \times 3 =$	$8 \times 10 =$	$7 \times 10 =$
$0 \times 9 =$	$5 \times 4 =$	$7 \times 0 =$	$5 \times 9 =$
$4 \times 8 =$	$2 \times 5 =$	$9 \times 1 =$	$10 \times 2 =$
$6 \times 4 =$	$0 \times 2 =$	$6 \times 3 =$	$6 \times 10 =$

Figure 3.10

3.1.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:

1.1.1 the intervals specified in grade 2 with increased number ranges;

Assessment Standard 1.3: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;

Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers;

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

- 1.10.1 building up and breaking down numbers;
- 1.10.2 doubling and halving;
- 1.10.3 number-lines;
- 1.10.4 rounding off in tens.

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

Assessment Standard 3.5: We know this when the learner recognises and describes three-dimensional objects from different positions;

Learning Outcome 5: The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

Assessment Standard 5.1: We know this when the learner collects data (alone and/or as a member of a group or team) in the classroom and school environment to answer questions posed by the teacher and class (e.g. ‘how many learners walk to school?’);

Assessment Standard 5.2: We know this when the learner sorts, orders and organises own and supplied data by one or more attributes for a particular reason. chosen by the teacher;

Assessment Standard 5.3: We know this when the learner draws pictures and constructs pictographs and bar graphs that have a 1-1 correspondence between own data and representation;

Assessment Standard 5.4: We know this when the learner reads, interprets and reports on information in own and a peer’s representations of data.

Assessment Standard 5.5: We know this when the learner reads and interprets data presented in simple tables and lists.

3.2 Patterns²

3.2.1 MATHEMATICS

3.2.2 Bonny and Tommy are road users too

3.2.3 EDUCATOR SECTION

3.2.4 Memorandum

- Number Concept to 800
- Operations:
- Addition – two and three digit numbers with regrouping (carrying) of the tens or hundreds.
- Subtraction – two and three digit numbers with regrouping (decomposition) of the tens or hundreds.
- Multiplication – two digit numbers with a one digit number with regrouping (carrying) of the tens.
- Division – with a remainder in the range of the tables.
- two digit numbers with a one digit number without regrouping of the tens to 99.

Division with a remainder but without the regrouping (decomposition) of the tens is taught. This demands much work in the range of the tables. The learners need to understand this stage very well before they work with higher numbers. **Testing of the tables is essential.**

In Module 5, the **number concept** is expanded to **800**. In addition and subtraction, two- and three-digit numbers are introduced. Multiplication is done with regrouping of tens. Division with a remainder, but without regrouping or breaking up of tens, is taught. Initially it is only done in the number range of the tables. The learners need to have a very good understanding of this before it can be extended to larger numbers. Testing of tables remains extremely important.

Here the learners are exposed to other ways of summarising data. An oral discussion of possible changes and the results thereof is necessary.

²This content is available online at <<http://cnx.org/content/m32276/1.1/>>.

Ensure that the learners realise that they need to cover the distance between the school and their homes at least twice daily: They come to school and have to go home again.

The learners need to find out what the distance between home and school is before they do the work on this page.

This is the first Grade 3 Module to expose learners to determining particular points on a graph so that they can draw the graph, and for working with 2 sets of data on the same graph. You therefore need to be doubly sure that they understand how this is done. Easier examples could be discussed in preparation for the exercise.

Precede this with a discussion on what a bus looks like from the **front** and from the **rear** before you let the learners attempt the drawings.

Counting in 8's must be done before the table at the bottom of this page is completed.

Learners must discover the relationship (pattern). There are similar patterns on p. 11.

This worksheet is simply aimed at determining the level of thinking involved with operations requiring addition and subtraction and finding out where special attention is required. The work sheet does not have to be completed in one session.

Concrete work is necessary to explain the regrouping of tens during multiplication.

Ensure that the learners understand the patterns where division is involved before expecting them to complete the exercises.

Here we deal with **division with a remainder**. Explain that it is sometimes impossible to **divide the remainder** into fractions, simply because of the nature of the problem.

E.g. 1 fried or boiled egg can be divided but 1 uncooked egg cannot be divided and shared.

This is written as the **remainder (rem.)**.

Begin with work in the number range of the tables (to tenth multiple). You will need much concrete work and lots of repetition, because it is very important that the learners understand what they are doing before you go on to larger numbers.

The learners must do research in books and pamphlets about the different traffic signs and discuss them before they complete the signs.

Many pictures and different objects with these shapes are required to ensure that the learners recognise all the shapes.

Make the learners aware of the fact that there is no easy way of folding or dividing for obtaining **fifths** of 2-D shapes. This must be determined by **measuring**.

It may be necessary to help the learners to determine the location of the first square that must be coloured in. Do not offer help if they are able to find it independently.

Encourage learners to tell where they live and how they would explain the route to their home to someone else. Help them to explain an easy route to find a certain room in the school.

3.2.5 LEARNER SECTION

3.2.6 Content

3.2.6.1 ACTIVITY: Patterns [LO 1.8, LO 2.2, LO 2.4]

Bonny and **Tommy** discovered patterns that helped them to do calculations easily.

☺ Look at the patterns and complete the number sentences:

$2 \times 5 = 10$	$2 \times 50 = 100$	$20 \times 5 = 100$
$2 \times 7 = \text{-----}$	$2 \times 70 = \text{-----}$	$20 \times 7 = \text{-----}$
$2 \times 9 = \text{-----}$	$2 \times 90 = \text{-----}$	$20 \times 9 = \text{-----}$
$3 \times 4 = 12$	$3 \times 40 = 120$	$30 \times 4 = 120$
$3 \times 6 = \text{-----}$	$3 \times 60 = \text{-----}$	$30 \times 6 = \text{-----}$
$3 \times 9 = \text{-----}$	$3 \times 90 = \text{-----}$	$30 \times 9 = \text{-----}$
$3 \times 5 = \text{-----}$	$3 \times 50 = \text{-----}$	$30 \times 5 = \text{-----}$
$4 \times 3 = 12$	$4 \times 30 = 120$	$40 \times 3 = 120$
$4 \times 5 = \text{-----}$	$4 \times 50 = \text{-----}$	$40 \times 5 = \text{-----}$
$4 \times 7 = \text{-----}$	$4 \times 70 = \text{-----}$	$40 \times 7 = \text{-----}$
$4 \times 6 = \text{-----}$	$4 \times 60 = \text{-----}$	$40 \times 6 = \text{-----}$

☺ Use the patterns to **complete** these number sentences:

$2 \times 60 = \text{-----}$	$3 \times 70 = \text{-----}$	$20 \times 4 = \text{-----}$	$40 \times 2 = \text{-----}$
$4 \times 40 = \text{-----}$	$5 \times 20 = \text{-----}$	$30 \times 7 = \text{-----}$	$50 \times 3 = \text{-----}$
$5 \times 60 = \text{-----}$	$2 \times 30 = \text{-----}$	$50 \times 5 = \text{-----}$	$30 \times 8 = \text{-----}$
$3 \times 20 = \text{-----}$	$4 \times 80 = \text{-----}$	$60 \times 3 = \text{-----}$	$90 \times 5 = \text{-----}$

☺ Use the pattern and **double** the following:


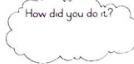
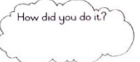
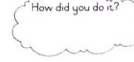
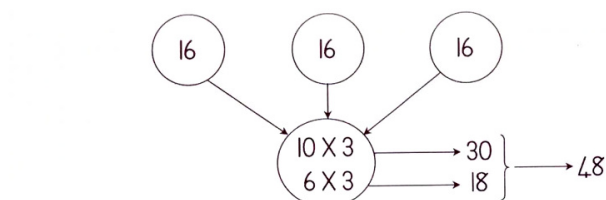
170:	 How did you do it?	364:	 How did you do it?
291:	 How did you do it?	355:	 How did you do it?

Figure 3.11

Bonny's netball team scored 16 goals in each match. They played 3 matches. How many goals did they score altogether?



Number sentence: $16 \times 3 = \square$

$$\begin{array}{rcl}
 10 \times 3 & = & 30 \\
 6 \times 3 & = & 18 \\
 16 \times 3 & = & \mathbf{48}
 \end{array}
 \quad \text{or} \quad
 \begin{array}{r}
 16 \\
 \times 3 \\
 \hline
 18 \quad (6 \times 3) \\
 30 \quad (10 \times 3) \\
 \hline
 \mathbf{48}
 \end{array}$$

They scored **48** goals.

Do the calculations. Use the method that you prefer.

$24 \times 4 = \dots\dots\dots$	$38 \times 2 = \dots\dots\dots$
$15 \times 5 = \dots\dots\dots$	$26 \times 3 = \dots\dots\dots$

Figure 3.12

- Use your own method to solve the problems. Show how you do it.

18 players of Bonny's group turned up for each of the last 5 netball practices. How many players attended the 5 practices altogether?

There were _____

24 cars were parked in front of the school. How many wheels were there altogether?

There were _____

Dad drives 14 km every day. How many km does he drive in 7 days?

He drives _____

- Fill in the answers as quickly as possible:

$\begin{array}{r} 6 \\ \times 1 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$
$\begin{array}{r} 10 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 40 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 30 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ \times 2 \\ \hline \end{array}$
$\begin{array}{r} 30 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 40 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 90 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ \times 5 \\ \hline \end{array}$
$\begin{array}{r} 12 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 22 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 31 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 23 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 42 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 68 \\ \times 1 \\ \hline \end{array}$
$\begin{array}{r} 15 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 24 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 47 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 29 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 36 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ \times 5 \\ \hline \end{array}$
$\begin{array}{r} 200 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 300 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 100 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 200 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 400 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 100 \\ \times 3 \\ \hline \end{array}$
$\begin{array}{r} 120 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 210 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 130 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 101 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 303 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 104 \\ \times 2 \\ \hline \end{array}$
$\begin{array}{r} 231 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 312 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 122 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 224 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 125 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 124 \\ \times 4 \\ \hline \end{array}$

Figure 3.13

-
- Think!

$24 \div 4 = \dots\dots\dots$	$30 \div 3 = \dots\dots\dots$	$20 \div 5 = \dots\dots\dots$	$40 \div \dots\dots\dots = 4$
$16 \div 2 = \dots\dots\dots$	$15 \div 5 = \dots\dots\dots$	$12 \div 4 = \dots\dots\dots$	$12 \div \dots\dots\dots = 2$
$18 \div 3 = \dots\dots\dots$	$20 \div 4 = \dots\dots\dots$	$21 \div 3 = \dots\dots\dots$	$45 \div \dots\dots\dots = 9$
$25 \div 5 = \dots\dots\dots$	$10 \div 1 = \dots\dots\dots$	$0 \div 2 = \dots\dots\dots$	$10 \div \dots\dots\dots = 5$
$8 \div 4 = \dots\dots\dots$	$9 \div 3 = \dots\dots\dots$	$4 \div 4 = \dots\dots\dots$	$18 \div \dots\dots\dots = 3$
$30 \div 5 = \dots\dots\dots$	$18 \div 2 = \dots\dots\dots$	$50 \div 5 = \dots\dots\dots$	$16 \div \dots\dots\dots = 4$
$7 \div 7 = \dots\dots\dots$	$35 \div 5 = \dots\dots\dots$	$8 \div 1 = \dots\dots\dots$	$3 \div \dots\dots\dots = 1$
$24 \div 3 = \dots\dots\dots$	$32 \div 4 = \dots\dots\dots$	$90 \div 10 = \dots\dots\dots$	$36 \div \dots\dots\dots = 9$
$5 \div 1 = \dots\dots\dots$	$12 \div 3 = \dots\dots\dots$	$28 \div 4 = \dots\dots\dots$	$6 \div \dots\dots\dots = 6$
$20 \div 2 = \dots\dots\dots$	$2 \div 2 = \dots\dots\dots$	$27 \div 3 = \dots\dots\dots$	$16 \div \dots\dots\dots = 2$

☺ Look at the patterns and complete the number sentences:

$10 \div 2 = 5$	$100 \div 2 = 50$	$100 \div 20 = 5$
$14 \div 2 = \dots\dots\dots$	$140 \div 2 = \dots\dots\dots$	$140 \div 20 = \dots\dots\dots$
$12 \div 2 = \dots\dots\dots$	$120 \div 2 = \dots\dots\dots$	$120 \div 20 = \dots\dots\dots$
$15 \div 3 = 5$	$150 \div 3 = 50$	$150 \div 30 = 5$
$21 \div 3 = \dots\dots\dots$	$210 \div 3 = \dots\dots\dots$	$210 \div 30 = \dots\dots\dots$
$18 \div 3 = \dots\dots\dots$	$180 \div 3 = \dots\dots\dots$	$180 \div 30 = \dots\dots\dots$
$27 \div 3 = \dots\dots\dots$	$270 \div 3 = \dots\dots\dots$	$270 \div 30 = \dots\dots\dots$
$12 \div 4 = 3$	$120 \div 4 = 30$	$120 \div 40 = 3$
$20 \div 4 = \dots\dots\dots$	$200 \div 4 = \dots\dots\dots$	$200 \div 40 = \dots\dots\dots$
$36 \div 4 = \dots\dots\dots$	$360 \div 4 = \dots\dots\dots$	$360 \div 40 = \dots\dots\dots$
$40 \div 4 = \dots\dots\dots$	$400 \div 4 = \dots\dots\dots$	$400 \div 40 = \dots\dots\dots$

☺ Use the same patterns to **complete** the number sentences:

$120 \div 2 = \dots\dots\dots$	$100 \div 5 = \dots\dots\dots$	$160 \div 40 = \dots\dots\dots$
$240 \div 3 = \dots\dots\dots$	$120 \div 4 = \dots\dots\dots$	$180 \div 20 = \dots\dots\dots$
$280 \div 4 = \dots\dots\dots$	$160 \div 2 = \dots\dots\dots$	$120 \div 30 = \dots\dots\dots$
$300 \div 3 = \dots\dots\dots$	$150 \div 5 = \dots\dots\dots$	$200 \div 20 = \dots\dots\dots$

☺ These patterns can also be used to make it easier to **halve** the numbers:





640:		326:	
760:		748:	

Figure 3.14

3.2.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.2: We know this when the learner copies and extends simple number sequences to at least 1 000;

Assessment Standard 2.4: We know this when the learner describes observed patterns.

3.3 Divide with a rem³

3.3.1 MATHEMATICS

3.3.2 Bonny and Tommy are road users too

3.3.3 EDUCATOR SECTION

3.3.4 Memorandum

- Number Concept to 800
- Operations:
 - Addition – two and three digit numbers with regrouping (carrying) of the tens or hundreds.
 - Subtraction – two and three digit numbers with regrouping (decomposition) of the tens or hundreds.
 - Multiplication – two digit numbers with a one digit number with regrouping (carrying) of the tens.
 - Division – with a remainder in the range of the tables.
 - two digit numbers with a one digit number without regrouping of the tens to 99.

Division with a remainder but without the regrouping (decomposition) of the tens is taught. This demands much work in the range of the tables. The learners need to understand this stage very well before they work with higher numbers. **Testing of the tables is essential.**

In Module 5, the **number concept** is expanded to **800**. In addition and subtraction, two- and three-digit numbers are introduced. Multiplication is done with regrouping of tens. Division with a remainder, but without regrouping or breaking up of tens, is taught. Initially it is only done in the number range of the tables. The learners need to have a very good understanding of this before it can be extended to larger numbers. Testing of tables remains extremely important.

Here the learners are exposed to other ways of summarising data. An oral discussion of possible changes and the results thereof is necessary.

Ensure that the learners realise that they need to cover the distance between the school and their homes at least twice daily: They come to school and have to go home again.

The learners need to find out what the distance between home and school is before they do the work on this page.

This is the first Grade 3 Module to expose learners to determining particular points on a graph so that they can draw the graph, and for working with 2 sets of data on the same graph. You therefore need to be doubly sure that they understand how this is done. Easier examples could be discussed in preparation for the exercise.

Precede this with a discussion on what a bus looks like from the **front** and from the **rear** before you let the learners attempt the drawings.

Counting in 8's must be done before the table at the bottom of this page is completed.

Learners must discover the relationship (pattern). There are similar patterns on p. 11.

This worksheet is simply aimed at determining the level of thinking involved with operations requiring addition and subtraction and finding out where special attention is required. The work sheet does not have to be completed in one session.

Concrete work is necessary to explain the regrouping of tens during multiplication.

Ensure that the learners understand the patterns where division is involved before expecting them to complete the exercises.

Here we deal with **division with a remainder**. Explain that it is sometimes impossible to **divide the remainder** into fractions, simply because of the nature of the problem.

E.g. 1 fried or boiled egg can be divided but 1 uncooked egg cannot be divided and shared.

This is written as the **remainder (rem.)**.

³This content is available online at <<http://cnx.org/content/m32298/1.1/>>.

Begin with work in the number range of the tables (to tenth multiple). You will need much concrete work and lots of repetition, because it is very important that the learners understand what they are doing before you go on to larger numbers.

The learners must do research in books and pamphlets about the different traffic signs and discuss them before they complete the signs.

Many pictures and different objects with these shapes are required to ensure that the learners recognise all the shapes.

Make the learners aware of the fact that there is no easy way of folding or dividing for obtaining **fifths** of 2-D shapes. This must be determined by **measuring**.

It may be necessary to help the learners to determine the location of the first square that must be coloured in. Do not offer help if they are able to find it independently.

Encourage learners to tell where they live and how they would explain the route to their home to someone else. Help them to explain an easy route to find a certain room in the school.

3.3.5 LEARNER SECTION

3.3.6 Content

3.3.6.1 ACTIVITY: Divide with a rem [LO 1.7, LO 1.8, LO 3.1]

- **Bonny and Tommy** discovered that some numbers couldn't be divided equally. They are the numbers that are not multiples of the divisors. Sometimes the remainder can be divided into smaller parts, but this is not always possible.
- **Take a good look:** Bonny has to divide 13 apples between herself and Tommy. How many will each one get?

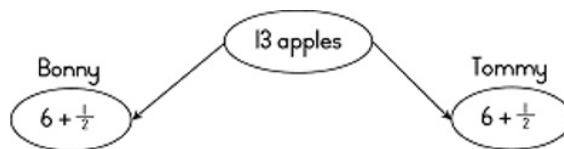


Figure 3.15

$$13 \div 2 = 6\frac{1}{2}$$

- Now look at this:

Tommy wants to divide 13 marbles equally between himself and Jaco. How many marbles will each one get and how many will be left over?



Figure 3.16

Each one gets 6 and 1 is left over. (Tommy cannot halve the marble.)

- He thought about it like this:

The nearest **multiple of 2** that is **less than 13**, is 12. He worked with $12 \div 2$ and knew that 1 would be left over. (Regroup: $12 + 1$) The 1 that is left over is known as the **remainder**. $13 \div 2 \rightarrow 6 \text{ rem. } 1$

Number sentence	Nearest multiple	Remainder	Complete number sentence
$13 \div 2$	$12 \div 2 = 6$	1	$13 \div 2 \rightarrow 6 \text{ rem } 1$

Table 3.2

- Do the same with the multiples of **3**, **4**, **5** and **10**.

Number sentence	Nearest multiple	Remainder	Complete number sentence
$13 \div 3$ $17 \div 4$ $22 \div 5$ $26 \div 3$ $36 \div 10$ $38 \div 4$ $52 \div 3$ $53 \div 10$			

Table 3.3

- Think!

$10 \div 3 \rightarrow$	.....	$9 \div 2 \rightarrow$	.....
$12 \div 5 \rightarrow$	.....	$6 \div 4 \rightarrow$	.....
$5 \div 2 \rightarrow$	.....	$13 \div 5 \rightarrow$	.....
$18 \div 10 \rightarrow$	.....	$14 \div 3 \rightarrow$	.....
$8 \div 3 \rightarrow$	.....	$3 \div 2 \rightarrow$	.....
$11 \div 4 \rightarrow$	.....	$5 \div 4 \rightarrow$	.....
$19 \div 5 \rightarrow$	.....	$26 \div 10 \rightarrow$	.....
$15 \div 2 \rightarrow$	.....	$28 \div 5 \rightarrow$	.....
$33 \div 10 \rightarrow$	.....	$25 \div 3 \rightarrow$	.....
$37 \div 5 \rightarrow$	.....	$39 \div 4 \rightarrow$	.....
$34 \div 4 \rightarrow$	.....	$53 \div 10 \rightarrow$	.....
$99 \div 10 \rightarrow$	.....	$48 \div 5 \rightarrow$	.....
$29 \div 3 \rightarrow$	.....	$17 \div 3 \rightarrow$	.....
$42 \div 5 \rightarrow$	.....	$27 \div 4 \rightarrow$	.....
$30 \div 4 \rightarrow$	.....	$44 \div 10 \rightarrow$	.....

Figure 3.17

- **Bonny** has 67 one-cent pieces and she wants to divide them equally between herself and **Tommy**. How many will each one get and how many will be left over?

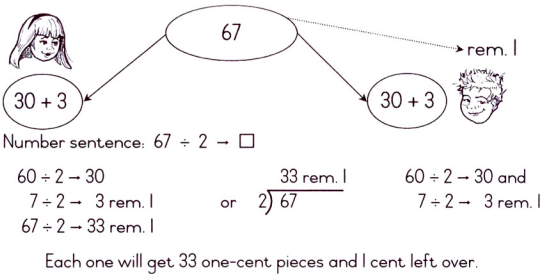


Figure 3.18

Each one will get 33 one-cent pieces and 1 cent left over.

- Do the calculations. Use the method that you prefer:

$46 \div 4 \rightarrow$	$68 \div 3 \rightarrow$
$85 \div 2 \rightarrow$	$59 \div 5 \rightarrow$

Table 3.4

- Use your own method to solve the problems. Show how you do it.

Your educator has bought 57 pencils. How many learners will each get 5 pencils and how many pencils will be left over?

- Granny has collected 95 eggs and she wants to provide 3 shops with an equal number of eggs. How many eggs will go to each shop and how many will be left over?
- Dad has R87 and wants to buy pens at R4 each. How many pens can he buy and how much money will be left over?

- Fill the answers in as quickly as possible:

$2 \overline{) 6}$	$3 \overline{) 9}$	$4 \overline{) 8}$	$5 \overline{) 5}$
$2 \overline{) 18}$	$5 \overline{) 35}$	$3 \overline{) 27}$	$10 \overline{) 60}$
$3 \overline{) 8}$	$5 \overline{) 9}$	$4 \overline{) 6}$	$10 \overline{) 12}$
$5 \overline{) 17}$	$2 \overline{) 13}$	$3 \overline{) 20}$	$4 \overline{) 18}$
$4 \overline{) 48}$	$5 \overline{) 55}$	$3 \overline{) 39}$	$2 \overline{) 68}$
$3 \overline{) 96}$	$2 \overline{) 82}$	$4 \overline{) 88}$	$2 \overline{) 46}$
$2 \overline{) 29}$	$4 \overline{) 46}$	$3 \overline{) 64}$	$5 \overline{) 56}$
$3 \overline{) 94}$	$2 \overline{) 65}$	$4 \overline{) 83}$	$3 \overline{) 61}$
$2 \overline{) 400}$	$3 \overline{) 300}$	$4 \overline{) 800}$	$5 \overline{) 500}$
$3 \overline{) 360}$	$4 \overline{) 408}$	$2 \overline{) 640}$	$5 \overline{) 505}$
$2 \overline{) 426}$	$5 \overline{) 555}$	$3 \overline{) 639}$	$4 \overline{) 488}$
$4 \overline{) 405}$	$3 \overline{) 308}$	$5 \overline{) 507}$	$2 \overline{) 809}$
$5 \overline{) 556}$	$2 \overline{) 285}$	$4 \overline{) 486}$	$3 \overline{) 965}$

Figure 3.19

- Complete the work on the wheels of the bus:



Figure 3.20

-
- Follow the number route to find out how far the bus has travelled. Begin at the triangle and end at the rectangle.

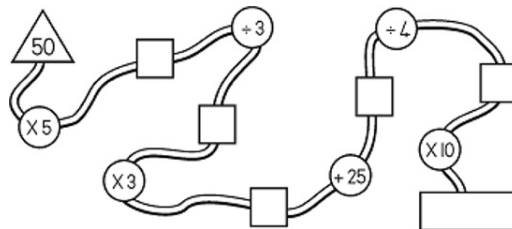


Figure 3.21

-
- How many road signs do you see on the way to school? There are signs that: give warnings, give commands and provide information. Find out what these different road signs look like.
 - Use these circles, rectangles and triangles to draw your own road signs.

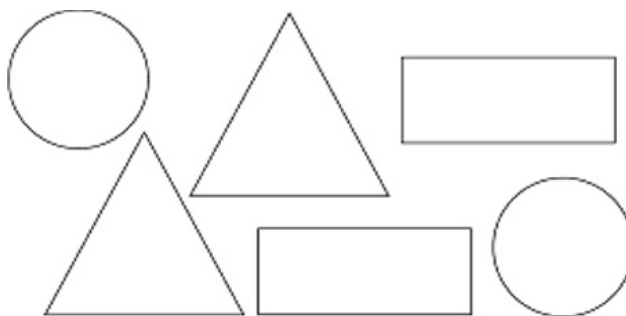


Figure 3.22

3.3.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.7: We know this when the learner solves and explains solutions to practical problems that involve equal sharing and grouping and that lead to solutions that also include unitary and nonunitary fractions (e.g. $\frac{1}{4}$, $\frac{3}{4}$);

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

Assessment Standard 3.1: We know this when the learner recognises, identifies and names two-dimensional shapes and three-dimensional objects in the environment and in pictures.

3.4 Shapes⁴

3.4.1 MATHEMATICS

3.4.2 Bonny and Tommy are road users too

3.4.3 EDUCATOR SECTION

3.4.4 Memorandum

- Number Concept to 800
- Operations:
- Addition – two and three digit numbers with regrouping (carrying) of the tens or hundreds.
- Subtraction – two and three digit numbers with regrouping (decomposition) of the tens or hundreds.
- Multiplication – two digit numbers with a one digit number with regrouping (carrying) of the tens.
- Division – with a remainder in the range of the tables.
- two digit numbers with a one digit number without regrouping of the tens to 99.

⁴This content is available online at <<http://cnx.org/content/m32300/1.1/>>.

Division with a remainder but without the regrouping (decomposition) of the tens is taught. This demands much work in the range of the tables. The learners need to understand this stage very well before they work with higher numbers. **Testing of the tables is essential.**

In Module 5, the **number concept** is expanded to **800**. In addition and subtraction, two- and three-digit numbers are introduced. Multiplication is done with regrouping of tens. Division with a remainder, but without regrouping or breaking up of tens, is taught. Initially it is only done in the number range of the tables. The learners need to have a very good understanding of this before it can be extended to larger numbers. Testing of tables remains extremely important.

Here the learners are exposed to other ways of summarising data. An oral discussion of possible changes and the results thereof is necessary.

Ensure that the learners realise that they need to cover the distance between the school and their homes at least twice daily: They come to school and have to go home again.

The learners need to find out what the distance between home and school is before they do the work on this page.

This is the first Grade 3 Module to expose learners to determining particular points on a graph so that they can draw the graph, and for working with 2 sets of data on the same graph. You therefore need to be doubly sure that they understand how this is done. Easier examples could be discussed in preparation for the exercise.

Precede this with a discussion on what a bus looks like from the **front** and from the **rear** before you let the learners attempt the drawings.

Counting in 8's must be done before the table at the bottom of this page is completed.

Learners must discover the relationship (pattern). There are similar patterns on p. 11.

This worksheet is simply aimed at determining the level of thinking involved with operations requiring addition and subtraction and finding out where special attention is required. The work sheet does not have to be completed in one session.

Concrete work is necessary to explain the regrouping of tens during multiplication.

Ensure that the learners understand the patterns where division is involved before expecting them to complete the exercises.

Here we deal with **division with a remainder**. Explain that it is sometimes impossible to **divide the remainder** into fractions, simply because of the nature of the problem.

E.g. 1 fried or boiled egg can be divided but 1 uncooked egg cannot be divided and shared.

This is written as the **remainder (rem.)**.

Begin with work in the number range of the tables (to tenth multiple). You will need much concrete work and lots of repetition, because it is very important that the learners understand what they are doing before you go on to larger numbers.

The learners must do research in books and pamphlets about the different traffic signs and discuss them before they complete the signs.

Many pictures and different objects with these shapes are required to ensure that the learners recognise all the shapes.

Make the learners aware of the fact that there is no easy way of folding or dividing for obtaining **fifths** of 2-D shapes. This must be determined by **measuring**.

It may be necessary to help the learners to determine the location of the first square that must be coloured in. Do not offer help if they are able to find it independently.

Encourage learners to tell where they live and how they would explain the route to their home to someone else. Help them to explain an easy route to find a certain room in the school.

3.4.5 LEARNER SECTION

3.4.6 Content

3.4.6.1 ACTIVITY: Shapes [LO 1.4, LO 1.8, LO 3.1, LO 3.6]

Ken jy hierdie vorms?

pyramid, rectangular block, prism, sphere, cylinder, cube and cone.

- Match the words to the correct shapes.

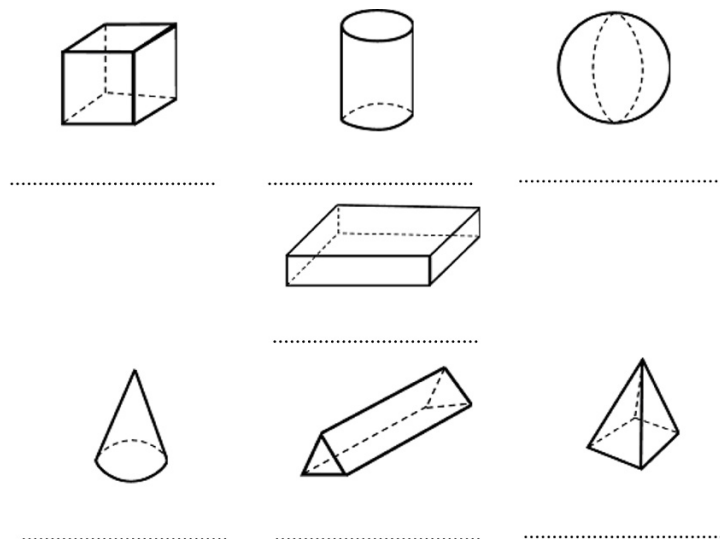


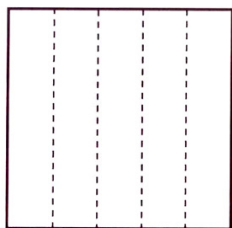
Figure 3.23

- Find pictures of objects in magazines and classify them according to their shapes. Write the name of at least one object for each shape.

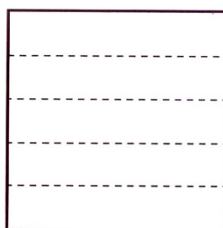
pyramid: _____
 rectangular block: _____
 prism: _____
 sphere: _____
 cylinder: _____
 cube: _____
 cone: _____

- Cut out the pictures of objects that you have found in the magazine and paste them here.
- Write the name of each object and the name of its shape.
- Compare your work with the work of other learners in the class.
- Use one of the following shapes and design a container for sweets: **a cylinder, a pyramid, a cone or a prism**. Decorate your container with circles, triangles and squares.

- These squares have been divided into **5 equal parts**.

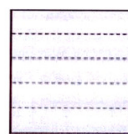
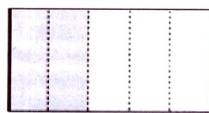


Colour in 1 of the 5 parts.
One fifth ($\frac{1}{5}$) is coloured in.



Colour in 3 of the 5 parts.
three fifths ($\frac{3}{5}$) is coloured in.

☺ Which **fraction** of each shape is coloured in?



☺ Colour $\frac{1}{5}$ in: Colour $\frac{2}{5}$ in: Colour $\frac{5}{5}$ in. Colour $\frac{4}{5}$ in.

○○○○○ ○○○○○ ○○○○○ ○○○○○
 ○○○○○ ○○○○○ ○○○○○ ○○○○○

☺ Colour in $\frac{1}{5}$ of each number and complete the number sentences:

○○○○○
 ○○○○○
 ○○○○○

$\frac{1}{5}$ of 15 is

$\frac{1}{5} \times 15 = \dots\dots\dots$

○○○○○
 ○○○○○
 ○○○○○
 ○○○○○
 ○○○○○
 ○○○○○
 ○○○○○
 ○○○○○

$\frac{1}{5}$ of 45 is

$\frac{1}{5} \times 45 = \dots\dots\dots$

○○○○○
 ○○○○○

$\frac{1}{5}$ of 10 is

$\frac{1}{5} \times 10 = \dots\dots\dots$

○○○○○
 ○○○○○
 ○○○○○
 ○○○○○

$\frac{1}{5}$ of 20 is

$\frac{1}{5} \times 20 = \dots\dots\dots$

Figure 3.24

Use any method to solve the problems. Show how you did it.

- The bus has to travel 280 km in 4 hours. How many km must it travel in 1 hour?

Number sentence:

- Mom had R200. She bought food for R65 and put fuel in the car for R1 10 rand. How much money is left over in her purse?

Number sentence:

- Two kombi's each transport 12 learners to school every day. How many learners do they transport in 4 days altogether?

Number sentence: _____

- Granny has baked 1 10 cookies each day for the past 3 days. We have eaten 50. How many cookies are left over?

Number sentence: _____

- I have a rope that is 2 m long. How many 10 cm pieces can I cut from it?

Number sentence: _____

- Here is a **street plan** of the area where **Bonny** and **Tommy** live.

Key: ● Robots ○ Stop signs ● Traffic circle

Figure 3.25

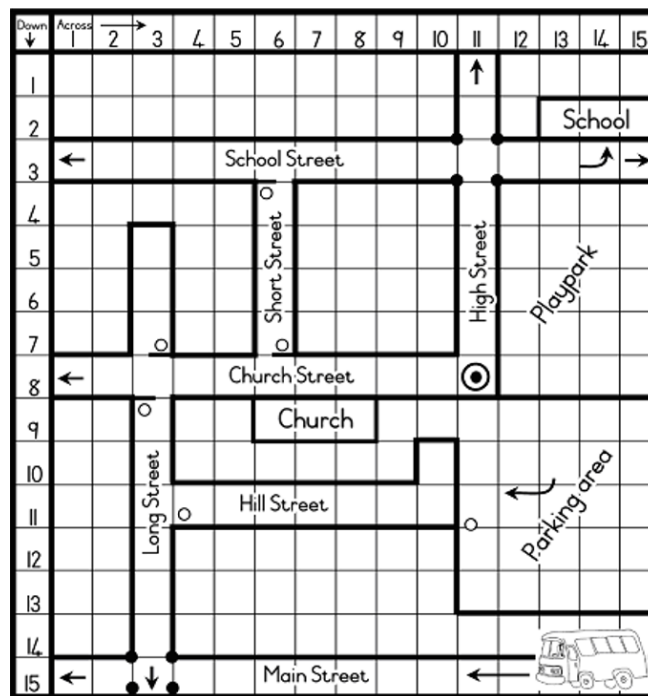


Figure 3.26

Colour the following squares to mark the route that the bus takes.

Down : Across

3 : 1 1, 1 2, 1 3, 1 4

4 : 1 1

5 : 1 1

6 : 1 1

7 : 1 1

8 : 3, 4, 5, 6, 7, 8, 9, 1 0, 1 1

1 5 : 3, 4, 5, 6, 7, 8, 9, 1 0, 1 1, 1 2, 1 3, 1 4, 1 5

Down : Across

9 : 3

1 0 : 3

1 1 : 3

1 2 : 3

1 3 : 3

1 4 : 3

- If each square that you have coloured in represents **10 m**, the bus travelsm.
- If each square represents **100 m**, the bus travels m.
- How many km is this? Try to work it out! It is km.
- Explain to a friend the route that the bus takes. Use the direction words **left** and **right**, as well as other information from the street plan. Now write the directions here:
- Where do **Bonny** and **Tommy** live? Follow the directions and draw the route on the street plan as you go.

Walk along School Street as far as Short Street; turn left into Short Street; walk as far as the stop sign; turn right into Church Street; walk to Long Street and turn right again, into Long Street. They live on the left hand side of Long Street, in the 2nd house from the corner.

- Colour in the square.
- What is the number of their house?

(Square : Down : Across)? _____ : _____

3.4.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers;

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

Assessment Standard 3.1: We know this when the learner recognises, identifies and names two-dimensional shapes and three-dimensional objects in the environment and in pictures.

Assessment Standard 3.6: We know this when the learner reads, interprets and draws informal maps of the school environment or of an arrangement of three-dimensional objects and locates objects on the map.

3.5 Money notes⁵

3.5.1 MATHEMATICS

3.5.2 Bonny and Tommy visit the zoo

3.5.3 EDUCATOR SECTION

3.5.4 Memorandum

- **Number Concept** to 1 000 (These are the minimum requirements for Grade 3.)
- Operations:
- **Addition** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- **Subtraction** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- **Multiplication** – two and three digit numbers with a one digit number, with or without regrouping of the tens.
- **Division** – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. $75 \div 5 =$

(In the following module remainders with regrouping of the tens are practised again.)

In Module 6 the **number concept** is extended to **1000**. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, **without a remainder** in Module 6,

e.g. $75 \div 5 = \leq$ (In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes. They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants' trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of **1000**.

999 + 1 completes a ten that is taken to the **tens** to complete **10 tens** which make a hundred. The hundred is taken to the **hundreds** to complete **10 hundreds**. These make a group of a thousand which has to be taken to the **thousands**.

1000: the 1 represents **1 group of a thousand** and the 3 noughts are the placeholders for the hundreds, tens and units.

Once the learners have completed the number block, it must be used for **many** counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practised orally and in the concrete.

Let the learners count in 9's before asking them to write it.

Help them to realise that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If **10c** and **1c pieces** are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be **broken up and regrouped with the ones** before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

It might help them to draw the diagrams.

⁵This content is available online at <<http://cnx.org/content/m32301/1.1/>>.

The decision to make use of carried numbers is left to the educator.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that **tenths**, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a $\frac{1}{2}$ and a $\frac{1}{4}$.

Guide them to discover that they, by first obtaining **fifths**, can divide each fifth down the middle to obtain **tenths**.

Discuss **symmetrical shapes** with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

3.5.5 LEARNER SECTION

3.5.6 Content

3.5.6.1 ACTIVITY: Money notes [LO 1.6]

- **Bonny** and **Tommy** each paid an entry fee of R10. Dad and Mom each paid R20. How much did they pay altogether?

They paid R_____.

- Dad paid with a R200-note. How much change did he get?

He got R_____ change.

- Do you know what all the money notes look like? Which animals are on each of these notes?

R10 _____
 R20 _____
 R50 _____
 R100 _____
 R200 _____

- For which notes could I exchange the following?

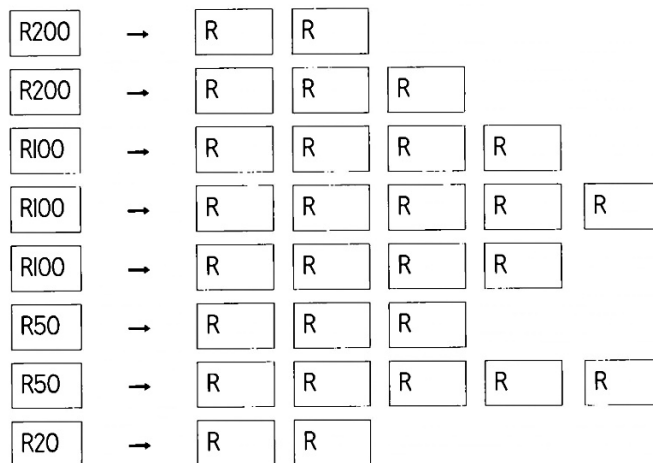


Figure 3.27

Complete:

4 R20-notes are R _____
 3 R50-notes are R _____
 9 R10-notes are R _____
 10 R100-note are R _____
 _____ R10-notes are R90
 _____ R100-notes are R500
 _____ R200-notes are R600
 _____ R50-notes are R400

- Count the money in the till at the zoo:

R200	R100	R100	R50	R50	R20	R10	R_____
R200	R200	R100	R20	R20	R20	R20	R_____
R50	R50	R50	R10	R10	R10	R5	R_____
R200	R200	R200	R200	R50	R20	R20	R_____
R100	R100	R100	R100	R100	R100	R10	R_____

Figure 3.28

The entrance fee at the zoo has been increased to R25 for an adult and R15 for a child. Give the total cost for:

6 adults and 4 children: R_____ + R_____ = R_____
 4 adults and 10 children: R_____ + R_____ = R_____
 10 adults and 8 children: R_____ + R_____ = R_____

- Use any method to see if you can help me with this problem. Twelve people visited the zoo. They paid R260 in all. How many of them were adults and how many were children?

3.5.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents.

3.6 Scale drawings⁶

3.6.1 MATHEMATICS

3.6.2 Bonny and Tommy visit the zoo

3.6.3 EDUCATOR SECTION

3.6.4 Memorandum

- **Number Concept** to 1 000 (These are the minimum requirements for Grade 3.)
- Operations:
- **Addition** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- **Subtraction** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- **Multiplication** – two and three digit numbers with a one digit number, with or without regrouping of the tens.
- **Division** – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. $75 \div 5 =$

(In the following module remainders with regrouping of the tens are practised again).

In Module 6 the **number concept** is extended to **1000**. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, **without a remainder** in Module 6,

e.g. $75 \div 5 = \leq$ (In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes. They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants' trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of **1000**.

999 + 1 completes a ten that is taken to the **tens** to complete **10 tens** which make a hundred. The hundred is taken to the **hundreds** to complete **10 hundreds**. These make a group of a thousand which has to be taken to the **thousands**.

1000: the 1 represents **1 group of a thousand** and the 3 noughts are the placeholders for the hundreds, tens and units.

Once the learners have completed the number block, it must be used for **many** counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practised orally and in the concrete.

Let the learners count in 9's before asking them to write it.

Help them to realise that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If **10c** and **1c pieces** are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be **broken up and regrouped with the ones** before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

It might help them to draw the diagrams.

⁶This content is available online at <<http://cnx.org/content/m32304/1.1/>>.

The decision to make use of carried numbers is left to the educator.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that **tenths**, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a $\frac{1}{2}$ and a $\frac{1}{4}$.

Guide them to discover that they, by first obtaining **fifths**, can divide each fifth down the middle to obtain **tenths**.

Discuss **symmetrical shapes** with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

3.6.5 LEANER SECTION

3.6.6 Content

3.6.6.1 ACTIVITY: Scale drawings [L0 1.8, L0 4.5, L0 5.5]

Bonny and Tommy enjoyed watching the elephants most of all. There were large ones and small ones.

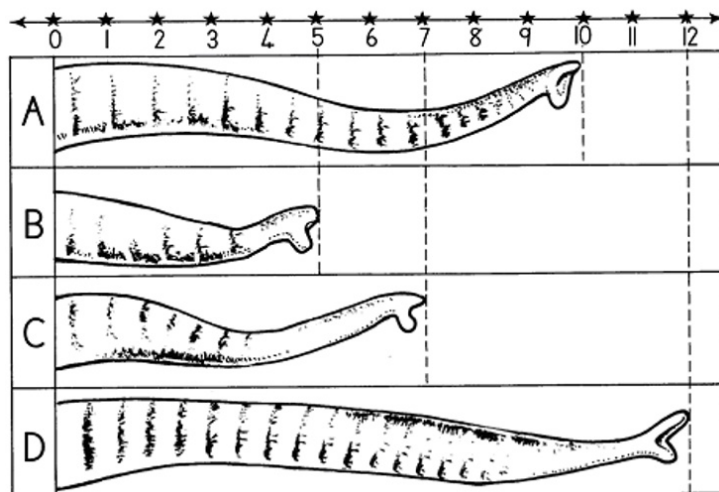


Figure 3.29

- Which trunk is the longest? _____
- Which trunk is the shortest? _____
- What can you deduce from this? _____

Each of the spaces between * and * on the number line represents **20 cm**. Use any method to calculate the length of each trunk:

Some animals **eat meat**. They are **carnivores**.

Others **eat plants** and they are **herbivores**.

The carnivores together eat 100 kg of meat every day.

- Complete:

Days:	1	2	3	4						
Kg:	100									

Table 3.5

- Their meat is packed in 50 kg packets. How many packets of meat could the keeper make from 400 kg of meat?

He could _____
 This is enough meat for _____
 days.

- There are 4 cages with birds. They eat 1 kg of seed every day.

How many 250g containers will this make? (Draw the 250g containers.)

- The people at the zoo bought 5 packets of seed weighing 20 kg each. This is enough seed for _____ days.
- Draw all the 20 kg packets of seed that are needed for 1 year.
- This is how much drinking water is placed in the monkeys' cages every day:



Figure 3.30

- Draw the 1l containers that can be filled from this.
- Draw the 500 ml containers that can be filled from this.
- Use your own method to do the calculations.

The small antelope drinks 125 ml of milk at a time. He gets milk 4 times per day. How much milk does he drink altogether?

It drinks _____

- There are 69l of water that have to be taken to 3 lion cages. How many litres of water can be taken to each cage?

Each cage _____

- One of the monkeys is ill and the vet has said that it must be given 20 ml of medicine in the morning and in the evening. How many teaspoonfuls will it drink in a day? Remember: 1 t = 5 ml

It will drink _____

3.6.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.5: We know this when the learner estimates, measures, compares and orders three-dimensional objects using non-standard and standard measures;

Learning Outcome 5: The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

Assessment Standard 5.5: We know this when the learner reads and interprets data presented in simple tables and lists.

3.7 Number block⁷

3.7.1 MATHEMATICS

3.7.2 Bonny and Tommy visit the zoo

3.7.3 EDUCATOR SECTION

3.7.4 Memorandum

- Number Concept to 1 000 (These are the minimum requirements for Grade 3.)
- Operations:
- Addition – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- Subtraction – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- Multiplication – two and three digit numbers with a one digit number, with or without regrouping of the tens.
- Division – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. $75 \div 5 =$

(In the following module remainders with regrouping of the tens are practised again).

In Module 6 the number concept is extended to 1000. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, without a remainder in Module 6,

e.g. $75 \div 5 = \text{£}$ (In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes. They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants' trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of 1000.

$999 + 1$ completes a ten that is taken to the tens to complete 10 tens which make a hundred. The hundred is taken to the hundreds to complete 10 hundreds. These make a group of a thousand which has to be taken to the thousands.

1000: the 1 represents 1 group of a thousand and the 3 noughts are the placeholders for the hundreds, tens and units.

⁷This content is available online at <<http://cnx.org/content/m32455/1.1/>>.

Once the learners have completed the number block, it must be used for many counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practised orally and in the concrete.

Let the learners count in 9's before asking them to write it.

Help them to realise that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If 10c and 1c pieces are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be broken up and regrouped with the ones before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

It might help them to draw the diagrams.

The decision to make use of carried numbers is left to the educator.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that tenths, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a $\frac{1}{2}$ and a $\frac{1}{4}$.

Guide them to discover that they, by first obtaining fifths, can divide each fifth down the middle to obtain tenths.

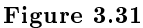
Discuss symmetrical shapes with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

3.7.5 LEARNER SECTION

3.7.6 Content

3.7.6.1 ACTIVITY: Number block [LO 1.1, LO 1.3, LO 1.4, LO 1.5, LO 1.8, LO 1.9, LO 1.10]

- Which numbers do these diagrams represent?



- Now there are hundreds. It is equal to _____



10	20	30	40	50	60	70	80	90	100
1 10					160				200
210									
									400
			440						
510									600
						670			
710									800
910									

Table 3.6

- When you move horizontally across the number block, you count in tens.

780 790 _____ 860
920 930 _____ 1000
950 940 _____ 870
860 850 _____ 780

- When you move vertically down the number block, you count in hundreds.

200 300 _____ 1000
120 220 _____ 920
9650 860 _____ 160

- Complete:

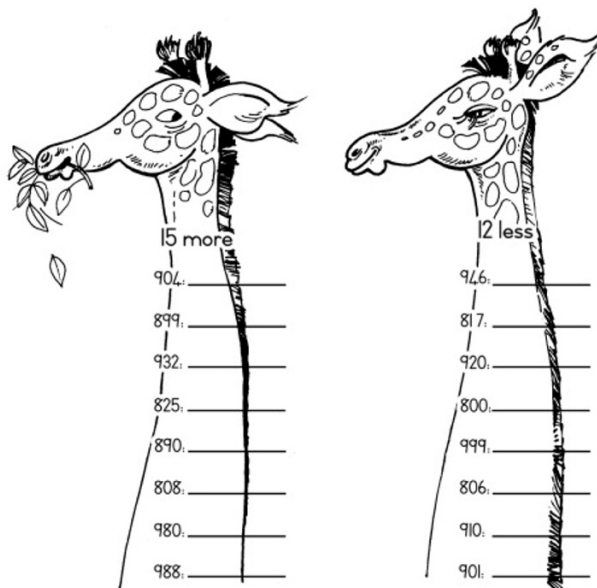


Figure 3.33

- Write down all the 3-digit numbers that you can make with the numbers 3, 8 and 9:
- In which number does the 3 have the highest place value? _____
- In which of these numbers does the 9 have the lowest place value? _____
- Arrange the numbers from the most to the least: _____

- Fill in $<$, $>$ or $=$:

$$\begin{aligned}
 650 + 30 & \dots\dots 630 + 50 \\
 500 + 162 & \dots\dots 500 + 126 \\
 348 + 100 & \dots\dots 200 + 250 \\
 730 - 110 & \dots\dots 720 - 100 \\
 852 - 400 & \dots\dots 852 - 452 \\
 900 - 500 & \dots\dots 900 - 400
 \end{aligned}$$

- Give the even numbers to the elephant and the uneven numbers to the lion:

1 1 7 426 853 555 851 504 912 963
 404 765 299 510 400 889 668 1000

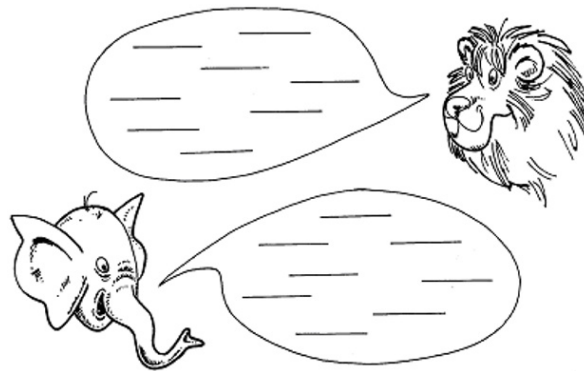


Figure 3.34

- What is the difference in mass between the lion and the bear? _____
 - What is the sum of the mass of the lion and the bear? _____
 - Which animal has a greater mass than the bear? _____
 - Which mammal has a smaller mass than the lion? _____
-
- Double all the numbers on the tortoise's shell.

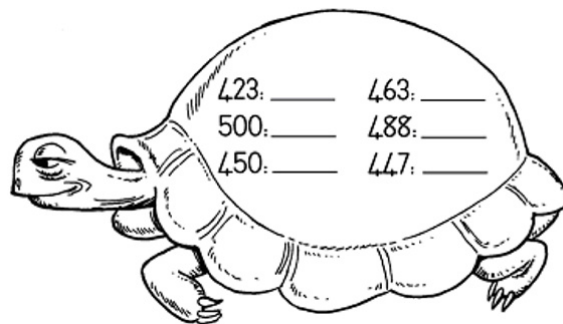


Figure 3.35

- Halve all these numbers.

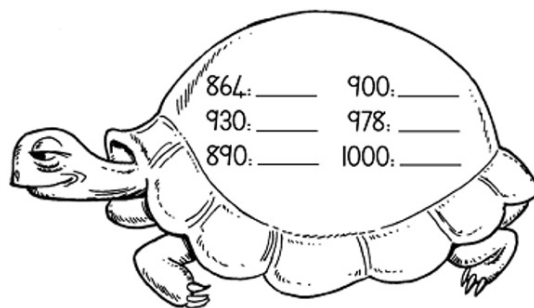


Figure 3.36

- Write the number that comes 4 places before:

837: _____ 964: _____ 850: _____ 900: _____
 802: _____ 903: _____ 892: _____ 1000: _____

- Write the number that comes 6 places after:

833: _____ 952: _____ 830: _____ 990: _____
 824: _____ 974: _____ 899: _____ 993: _____

- Write the number names:

319: _____
 490: _____
 682: _____
 807: _____
 973: _____

- Write the numbers:

four hundred and thirty seven: _____
 two hundred and six: _____
 seven hundred and sixty five: _____
 eight hundred and fourteen: _____
 nine hundred and ninety three: _____

- Fill in \times or \div signs:

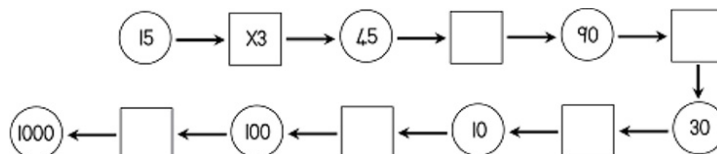


Figure 3.37

- Complete the pyramid:

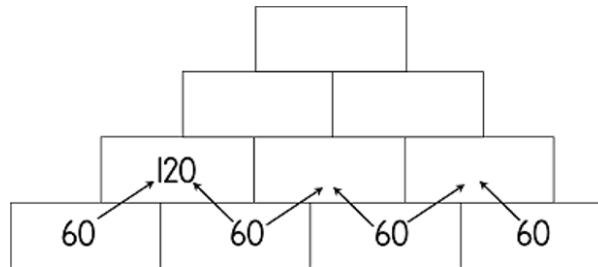


Figure 3.38

-
- Fill in the missing numbers:

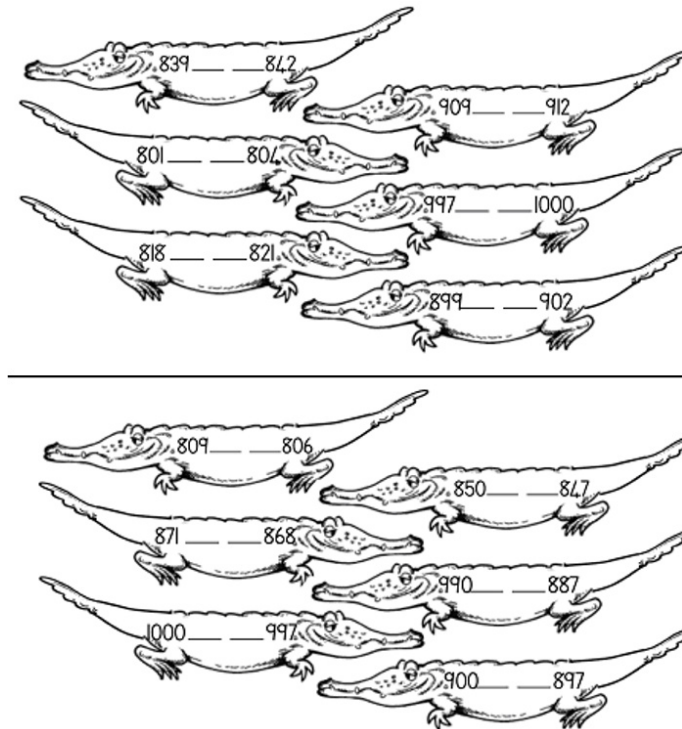


Figure 3.39

- Complete:

$$\begin{array}{rcl} 615 & = & 600 + \underline{\hspace{1cm}} + 5 \\ 937 & = & 800 + \underline{\hspace{1cm}} + 7 \\ 550 & = & \underline{\hspace{1cm}} + 140 + \underline{\hspace{1cm}} \\ 453 & = & 400 + \underline{\hspace{1cm}} + 13 \\ 749 & = & \underline{\hspace{1cm}} + 140 + \underline{\hspace{1cm}} \\ 824 & = & 600 + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \end{array}$$

- Use the values of the letters to do the calculations:

a = 800 m = 50 p = 70 t = 5 w = 9

$$m + p + w = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$a + m + t = \quad + \quad + \quad =$$

$$a - p - w = \frac{a + b}{2} + \frac{a - b}{2} + \frac{a - b}{2} = \frac{a + b}{2}$$

- Complete:


888 890	904
97 1 973	987
800 803	824
880 884	912
915 920	955

- Complete:

860 858	844
913 911	897
999 996	875
812 808	780
830 825	790

- Add the numbers horizontally and vertically:

200	30	6	
100	110	7	
200	190	15	



300	20	13	
200	70	8	
100	130	7	




Figure 3.40

- Write an animal story to match the number sentence and do the calculation.

$$136 + 160 - 82 =$$

- Complete:

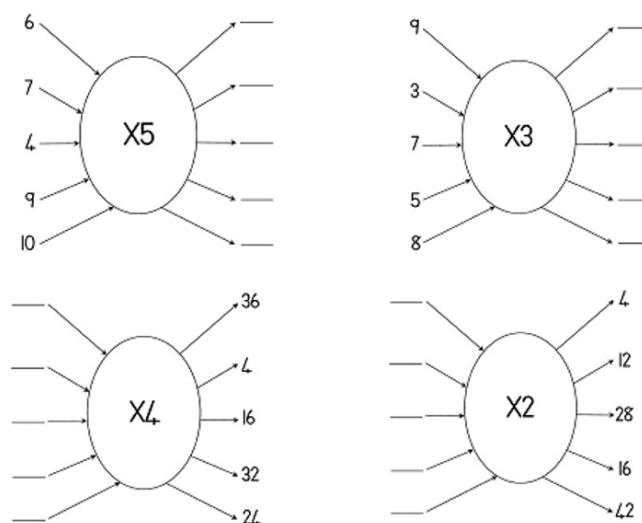


Figure 3.41

- Use your own method to do the calculations:

$$\begin{aligned}
 164 + 103 + 131 &= \text{-----} \\
 150 + 247 - 153 &= \text{-----} \\
 374 - 150 - 117 &= \text{-----}
 \end{aligned}$$

3.7.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:

1.1.1 the intervals specified in grade 2 with increased number ranges;

Assessment Standard 1.3: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;

Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers;

Assessment Standard 1.5: We know this when the learner recognises the place value of digits in whole numbers to at least 3-digit numbers;

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;

1.10.2 doubling and halving;

1.10.3 number-lines;

1.10.4 rounding off in tens.

3.8 Multiplication⁸

3.8.1 MATHEMATICS

3.8.2 Bonny and Tommy visit the zoo

3.8.3 EDUCATOR SECTION

3.8.4 Memorandum

- **Number Concept** to 1 000 (These are the minimum requirements for Grade 3.)
- Operations:
- **Addition** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- **Subtraction** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- **Multiplication** – two and three digit numbers with a one digit number, with or without regrouping of the tens.
- **Division** – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. $75 \div 5 =$

(In the following module remainders with regrouping of the tens are practised again).

In Module 6 the **number concept** is extended to **1000**. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, **without a remainder** in Module 6,

e.g. $75 \div 5 = \leq$ (In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes. They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants' trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of **1000**.

999 + 1 completes a ten that is taken to the **tens** to complete **10 tens** which make a hundred. The hundred is taken to the **hundreds** to complete **10 hundreds**. These make a group of a thousand which has to be taken to the **thousands**.

1000: the 1 represents **1 group of a thousand** and the 3 noughts are the placeholders for the hundreds, tens and units.

Once the learners have completed the number block, it must be used for **many** counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practised orally and in the concrete.

Let the learners count in 9's before asking them to write it.

Help them to realise that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If **10c** and **1c pieces** are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be **broken up and regrouped with the ones** before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

It might help them to draw the diagrams.

⁸This content is available online at <<http://cnx.org/content/m32305/1.1/>>.

The decision to make use of carried numbers is left to the educator.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that **tenths**, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a $\frac{1}{2}$ and a $\frac{1}{4}$.

Guide them to discover that they, by first obtaining **fifths**, can divide each fifth down the middle to obtain **tenths**.

Discuss **symmetrical shapes** with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

3.8.5 LEARNER SECTION

3.8.6 Content

3.8.6.1 ACTIVITY: Multiplication [LO 1.8]

- There are 1 16 birds in each of the 4 cages. How many birds are there altogether?

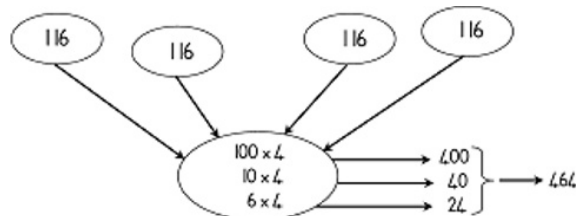


Figure 3.42

Number sentence: $1\ 16 \times 4 =$

Bonny did it like this:

$$\begin{array}{r} 1\ 00 \times 4 = 400 \\ 10 \times 4 = 40 \\ 6 \times 4 = 24 \\ \hline 1\ 16 \times 4 = 464 \end{array}$$

There are 464 birds altogether.

Tommy did it like this:

$$\begin{array}{r} 1\ 16 \\ \times 4 \\ \hline 24 \\ 40 \\ \hline 400 \\ \hline 464 \end{array} \quad \begin{array}{l} (6 \times 4) \\ (10 \times 4) \\ (100 \times 4) \end{array}$$

Figure 3.43

- Use the method that you prefer to solve these problems.

A farmer planted 125 trees in a row. There are 4 rows. How many trees did he plant altogether?

- The bus travels 118 km every day. How many km does it travel in 3 days?
- Complete:

$\begin{array}{r} 114 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 103 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 220 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 132 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 130 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 102 \\ \times 4 \\ \hline \end{array}$
$\begin{array}{r} 124 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 215 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 115 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 126 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 129 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 137 \\ \times 2 \\ \hline \end{array}$

Figure 3.44

- Use the method that you prefer to do these calculations.

$117 \times 3 =$ _____
 $118 \times 4 =$ _____
 $109 \times 4 + 120 =$ _____
 $115 \times 3 - 129 =$ _____

Count in 9's to discover the pattern. **Count in 90's.**

- Multiples:

1:	9	90
2:	18	.....
3:	27	.....
4:	.....	.....
5:	.....	.....
6:	.....	.....
7:	.....	.....
8:	.....	.....
9:	.....	.....
10:	.....	.....

Figure 3.45

- Use the pattern and complete the number sentences:

$4 \times 9 = 9 \times 4 = \dots\dots$	$4 \times 90 = 90 \times 4 = \dots\dots$
$10 \times 9 = 9 \times 10 = \dots\dots$	$10 \times 90 = 90 \times 10 = \dots\dots$
$1 \times 9 = 9 \times 1 = \dots\dots$	$1 \times 90 = 90 \times 1 = \dots\dots$
$3 \times 9 = 9 \times 3 = \dots\dots$	$3 \times 90 = 90 \times 3 = \dots\dots$
$9 \times 9 = 9 \times 9 = \dots\dots$	$9 \times 90 = 90 \times 9 = \dots\dots$
$5 \times 9 = 9 \times 5 = \dots\dots$	$5 \times 90 = 90 \times 5 = \dots\dots$
$2 \times 9 = 9 \times 2 = \dots\dots$	$2 \times 90 = 90 \times 2 = \dots\dots$
$6 \times 9 = 9 \times 6 = \dots\dots$	$6 \times 90 = 90 \times 6 = \dots\dots$
$8 \times 9 = 9 \times 8 = \dots\dots$	$8 \times 90 = 90 \times 8 = \dots\dots$
$7 \times 9 = 9 \times 7 = \dots\dots$	$7 \times 90 = 90 \times 7 = \dots\dots$

Figure 3.46

3.8.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems.

3.9 Adding and Subtracting⁹

3.9.1 MATHEMATICS

3.9.2 Bonny and Tommy visit the zoo

3.9.3 EDUCATOR SECTION

3.9.4 Memorandum

- **Number Concept** to 1 000 (These are the minimum requirements for Grade 3.)
- **Operations:**
- **Addition** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- **Subtraction** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- **Multiplication** – two and three digit numbers with a one digit number, with or without regrouping of the tens.
- **Division** – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. $75 \div 5 =$

(In the following module remainders with regrouping of the tens are practised again).

In Module 6 the **number concept** is extended to **1000**. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, **without a remainder** in Module 6,

⁹This content is available online at <<http://cnx.org/content/m32306/1.1/>>.

e.g. $75 \div 5 = \leq$ (In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes. They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants' trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of **1000**.

999 + 1 completes a **ten** that is taken to the **tens** to complete **10 tens** which make a **hundred**. The **hundred** is taken to the **hundreds** to complete **10 hundreds**. These make a group of a thousand which has to be taken to the **thousands**.

1000: the 1 represents **1 group of a thousand** and the 3 noughts are the placeholders for the hundreds, tens and units.

Once the learners have completed the number block, it must be used for **many** counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practised orally and in the concrete.

Let the learners count in 9's before asking them to write it.

Help them to realise that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If **10c** and **1c pieces** are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be **broken up and regrouped with the ones** before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

It might help them to draw the diagrams.

The decision to make use of carried numbers is left to the educator.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that **tenths**, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a $\frac{1}{2}$ and a $\frac{1}{4}$.

Guide them to discover that they, by first obtaining **fifths**, can divide each fifth down the middle to obtain **tenths**.

Discuss **symmetrical shapes** with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

3.9.5 LEARNER SECTION

3.9.6 Content

3.9.6.1 ACTIVITY: Adding and subtracting [LO 1.8, LO 1.9, LO 2.2, LO 2.4]

- These are **Bonny** and **Tommy's** secret recipes for adding or subtracting 9:

$$128 + 9 = 137$$

First recipe: $128 + 10 \rightarrow 138 - 1 \rightarrow 137$

$$72 + 9 = \dots\dots\dots 123 + 9 = \dots\dots\dots 217 + 19 = \dots\dots\dots$$

$$25 + 9 = \dots\dots\dots 264 + 9 = \dots\dots\dots 179 + 19 = \dots\dots\dots$$

$$84 + 9 = \dots\dots\dots 366 + 9 = \dots\dots\dots 218 + 19 = \dots\dots\dots$$

$$37 + 9 = \dots\dots\dots 197 + 9 = \dots\dots\dots 186 + 19 = \dots\dots\dots$$

$$48 + 9 = \dots\dots\dots 225 + 9 = \dots\dots\dots 306 + 19 = \dots\dots\dots$$

$$59 + 9 = \dots\dots\dots 304 + 9 = \dots\dots\dots 224 + 19 = \dots\dots\dots$$

$$134 - 9 = 125$$

Second recipe: $134 - 10 \rightarrow 124 + 1 \rightarrow 125$

$$56 - 9 = \dots\dots\dots 164 - 9 = \dots\dots\dots 137 - 19 = \dots\dots\dots$$

$$73 - 9 = \dots\dots\dots 282 - 9 = \dots\dots\dots 255 - 19 = \dots\dots\dots$$

$$81 - 9 = \dots\dots\dots 104 - 9 = \dots\dots\dots 376 - 19 = \dots\dots\dots$$

$$94 - 9 = \dots\dots\dots 321 - 9 = \dots\dots\dots 211 - 19 = \dots\dots\dots$$

$$65 - 9 = \dots\dots\dots 222 - 9 = \dots\dots\dots 348 - 19 = \dots\dots\dots$$

$$42 - 9 = \dots\dots\dots 185 - 9 = \dots\dots\dots 263 - 19 = \dots\dots\dots$$

Figure 3.47

- Find your own recipe for adding or subtracting **99**:

$69 + 99 = \Delta$	My recipe:	
$24 + 99 = \dots\dots\dots$	$103 + 99 = \dots\dots\dots$	$168 + 199 = \dots\dots\dots$
$75 + 99 = \dots\dots\dots$	$119 + 99 = \dots\dots\dots$	$234 + 199 = \dots\dots\dots$
$82 + 99 = \dots\dots\dots$	$361 + 99 = \dots\dots\dots$	$449 + 199 = \dots\dots\dots$
$90 + 99 = \dots\dots\dots$	$260 + 99 = \dots\dots\dots$	$772 + 199 = \dots\dots\dots$
$175 - 99 = \Delta$	My recipe:	
$118 - 99 = \dots\dots\dots$	$263 - 99 = \dots\dots\dots$	$359 - 199 = \dots\dots\dots$
$146 - 99 = \dots\dots\dots$	$206 - 99 = \dots\dots\dots$	$442 - 199 = \dots\dots\dots$
$171 - 99 = \dots\dots\dots$	$284 - 99 = \dots\dots\dots$	$555 - 199 = \dots\dots\dots$
$107 - 99 = \dots\dots\dots$	$241 - 99 = \dots\dots\dots$	$848 - 199 = \dots\dots\dots$

Figure 3.48

- Count forwards in 9's:

785 794 _____ 857
 834 843 _____ 906

- Count backwards in 9's:

1000 991 _____ 928
 843 834 _____ 771

- Count forwards in 99's:

361 35 _____ 828
 171 270 _____ 963

- Count backwards in 99's:

1000 901 _____ 208
 826 727 _____ 340

- Do you know:

How many legs do 120 giraffes have? _____

How many trunks do 345 elephants have? _____

How many horns do 342 bucks have? _____

How many legs do 452 ostriches have? _____

How many tails do 674 monkeys have? _____

How many tusks do 260 elephants have? _____

How many eyes do 85 zebras have? _____

How many wings do 333 birds have? _____

How many fingers do 40 baboons have? _____

How many feet do 21 tortoises have? _____

- Use your own method to solve these problems:

- A farmer has 125 ostriches. For 3 days, each one laid one egg. The farmer sold 108 eggs. How many eggs are left over?
- There are 12 lions. Each one eats 5 chickens per day. How many chickens do we need to feed the lions for 10 days?

3.9.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.2: We know this when the learner copies and extends simple number sequences to at least 1 000;

Assessment Standard 2.4: We know this when the learner describes observed patterns.

3.10 Dividing¹⁰

3.10.1 MATHEMATICS

3.10.2 Bonny and Tommy visit the zoo

3.10.3 EDUCATOR SECTION

3.10.4 Memorandum

- **Number Concept** to 1 000 (These are the minimum requirements for Grade 3.)
- Operations:
- **Addition** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- **Subtraction** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- **Multiplication** – two and three digit numbers with a one digit number, with or without regrouping of the tens.
- **Division** – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. $75 \div 5 =$

(In the following module remainders with regrouping of the tens are practised again).

In Module 6 the **number concept** is extended to **1000**. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, **without a remainder** in Module 6,

e.g. $75 \div 5 = \leq$ (In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes. They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants' trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of **1000**.

¹⁰This content is available online at <<http://cnx.org/content/m32307/1.1/>>.

$999 + 1$ completes a ten that is taken to the **tens** to complete **10 tens** which make a hundred. The hundred is taken to the **hundreds** to complete **10 hundreds**. These make a group of a thousand which has to be taken to the **thousands**.

1000: the 1 represents **1 group of a thousand** and the 3 noughts are the placeholders for the hundreds, tens and units.

Once the learners have completed the number block, it must be used for **many** counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practised orally and in the concrete.

Let the learners count in 9's before asking them to write it.

Help them to realise that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If **10c** and **1c pieces** are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be **broken up and regrouped with the ones** before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

It might help them to draw the diagrams.

The decision to make use of carried numbers is left to the educator.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that **tenths**, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a $\frac{1}{2}$ and a $\frac{1}{4}$.

Guide them to discover that they, by first obtaining **fifths**, can divide each fifth down the middle to obtain **tenths**.

Discuss **symmetrical shapes** with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

3.10.5 LEARNER SECTION

3.10.6 Content

3.10.6.1 ACTIVITY: Dividing [LO 1.8]

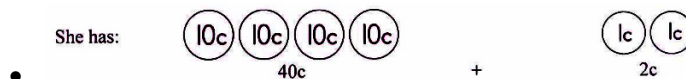


Figure 3.49

Bonny has 4 ten cent-pieces and 2 one cent-pieces. It is 42c altogether. She wants to divide it equally among **Tommy**, **Terry** and herself. How much will each one get?

- Here is 1 ten cent-piece that cannot be shared as a ten cent-piece. She exchanges it for 10 one cent-pieces. She has to **regroup**. Now she has:

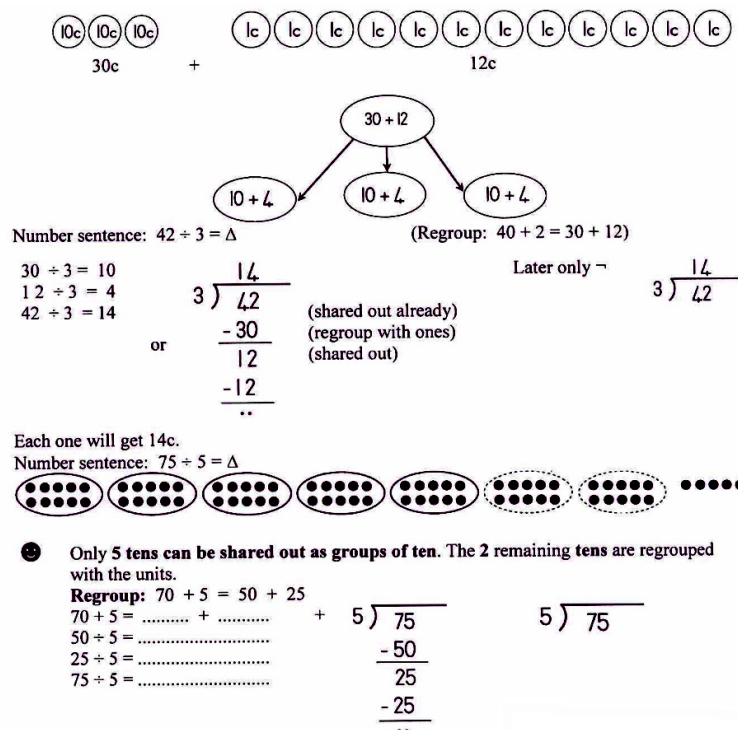


Figure 3.50

- Only 5 tens can be shared out as groups of ten. The 2 remaining tens are regrouped with the units.

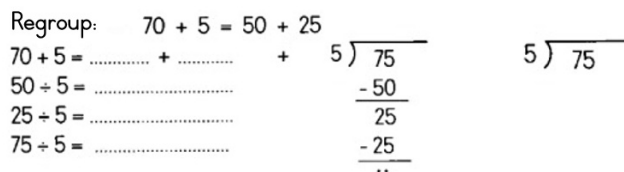


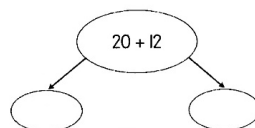
Figure 3.51

Look at the **divisor** to decide how many groups of ten can be shared out and how many tens have to be regrouped with the units.

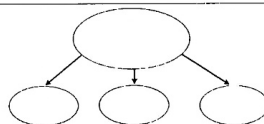
- Hergroepeer:

$$\begin{array}{l}
 34 \div 2 = \text{-----} \\
 48 \div 3 = \text{-----} \\
 64 \div 4 = \text{-----} \\
 72 \div 3 = \text{-----} \\
 65 \div 5 = \text{-----} \\
 30 + 4 = \text{-----} + \text{-----} \\
 40 + 8 = \text{-----} + \text{-----} \\
 60 + 4 = \text{-----} + \text{-----} \\
 70 + 2 = \text{-----} + \text{-----} \\
 60 + 5 = \text{-----} + \text{-----}
 \end{array}$$

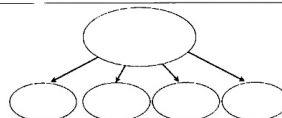
 $34 \div 2 = \square$



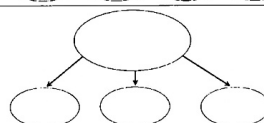
 $48 \div 3 = \square$



 $64 \div 4 = \square$



 $72 \div 3 = \square$



 $65 \div 5 = \square$

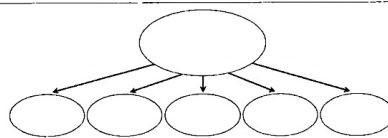


Figure 3.52

3.10.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems.

3.11 Shapes¹¹

3.11.1 MATHEMATICS

3.11.2 Bonny and Tommy visit the zoo

3.11.3 EDUCATOR SECTION

3.11.4 Memorandum

- **Number Concept** to 1 000 (These are the minimum requirements for Grade 3.)
- Operations:
- **Addition** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- **Subtraction** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
- **Multiplication** – two and three digit numbers with a one digit number, with or without regrouping of the tens.
- **Division** – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. $75 \div 5 =$

(In the following module remainders with regrouping of the tens are practised again).

In Module 6 the **number concept** is extended to **1000**. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, **without a remainder** in Module 6,

e.g. $75 \div 5 = \leq$ (In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes. They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants' trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of **1000**.

999 + 1 completes a ten that is taken to the **tens** to complete **10 tens** which make a hundred. The hundred is taken to the **hundreds** to complete **10 hundreds**. These make a group of a thousand which has to be taken to the **thousands**.

1000: the 1 represents **1 group of a thousand** and the 3 noughts are the placeholders for the hundreds, tens and units.

Once the learners have completed the number block, it must be used for **many** counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practised orally and in the concrete.

Let the learners count in 9's before asking them to write it.

Help them to realise that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If **10c** and **1c pieces** are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be **broken up and regrouped with the ones** before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

It might help them to draw the diagrams.

¹¹This content is available online at <<http://cnx.org/content/m32308/1.1/>>.

The decision to make use of carried numbers is left to the educator.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that **tenths**, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a $\frac{1}{2}$ and a $\frac{1}{4}$.

Guide them to discover that they, by first obtaining **fifths**, can divide each fifth down the middle to obtain **tenths**.

Discuss **symmetrical shapes** with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

3.11.5 LEARNER SECTION

3.11.6 Content

3.11.6.1 ACTIVITY: Shapes [LO 1.4, LO 3.4, LO 5.1, LO 5.2, LO 5.3, LO 5.4]

- Count the equal parts in this rectangle:

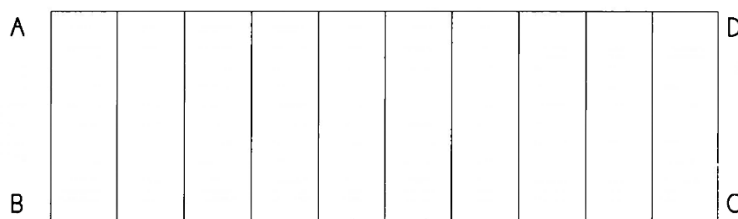


Figure 3.53

The rectangle is divided into _____ equal parts.

Each part is called a _____.

- Which fraction of each shape is coloured?

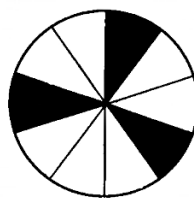
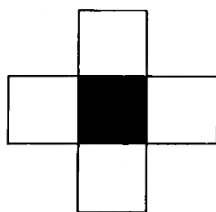


Figure 3.54

Tenths:	1	2	3	4	5	6	7	8	9	10
Number:	9									

Table 3.7

Bonny has eaten $\frac{3}{10}$ of the chocolate and Tommy has had $\frac{2}{10}$.. What fraction of the chocolate is left over? Colour in the remaining part.

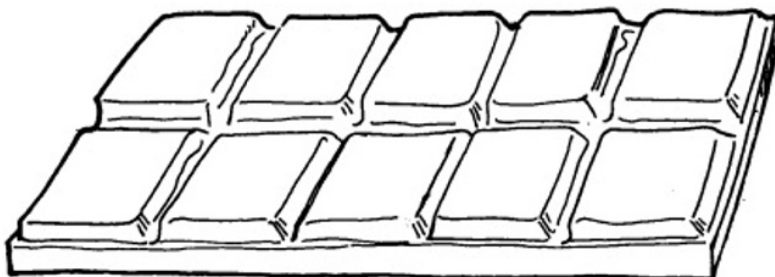


Figure 3.57

- Draw the missing half of the picture.

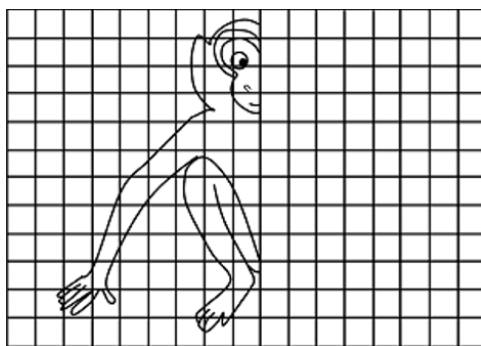


Figure 3.58

- The **elephant**, the **lion**, the **cheetah**, the **rhinoceros** and the **buffalo** are known as the "**big five**". Find out from your classmates what their favourite animal is and complete the graph by colouring a block for each classmate.

Chapter 4

Term 4

4.1 Numbers¹

4.1.1 MATHEMATICS

4.1.2 Bonny and Tommy's school fête

4.1.3 EDUCATOR SECTION

4.1.4 Memorandum

It is imperative that the educator is familiar with the content of this module before it is given to the learners, as this module contains advanced and enrichment work. Learners in the first two groups should find it a challenge and should be able to cope with it. Do not expose learners to tasks that are too difficult for them and which frustrate them. (Select according to their abilities).

The activities, the construction of mobiles, can be done classically. They can be combined with Technology.

- **Number Concept** to 1 500
- **Operations:**
- **Addition, subtraction and multiplication** – two and three digit numbers with and without regrouping of the tens and the hundreds;
- **Division** – two digit numbers with regrouping of the **tens and remainders**, e.g. $66 \div 4 =$

In **Module 7** number concept is extended to 1500. All addition, subtraction and multiplication calculations are performed with 2-digit and 3-digit numbers with and without regrouping of hundreds and tens. Division is only done with 2-digit numbers with regrouping of tens, with a remainder e.g. $66 \div 4 =$

A discussion about the fête is necessary beforehand so that the learners may order their thoughts and plan the picture.

The learners must understand counting onwards from one thousand very well. Use similar number blocks from **1 101 to 1200, 1201 to 1300, 1301 to 1400 and 1401 to 1500** if necessary.

Shopping games should be used to help learners to calculate change.

Give special attention to equal quantities of and $m\ell$.

Use the posters for more calculations and provide opportunities for the learners to ask one another to do certain calculations.

This is an activity to be done on the playground. Let the learners measure with a trundle wheel.

Learners are expected to be able to count in a language other than their home language. If there are learners in the class who are proficient in another language, they should be given the opportunity to do so.

¹This content is available online at <<http://cnx.org/content/m32309/1.1/>>.

These involve consolidation of operations. Attend to problem areas.

The calculations of fractions of numbers may cause problems for some learners. Encourage them to try, even if they only accomplish the easier ones.

The $8x$ and \div are done simultaneously with **eights**. It is not compulsory for them to know these.

Multiplication is done with regrouping of hundreds as well as tens.

This activity tests the learners' knowledge of numbers and reasoning abilities.

Division with regrouping the tens and a remainder requires much practice in the concrete. Learners must be able to say how they think and what they are doing before they attempt written work. Much practice is needed.

Encourage learners to test their operations.

This activity cannot be completed in one day. It can be combined with Technology. If there is not enough time, learners can be divided into groups of 5 to allow each learner to complete 1 shape, in which case the group will make a collective mobile sharing all knowledge with one another. If they find folding and pasting the round edges of the cone and cylinder they can paste these on the outside or they can cut off the round edges.

The shapes should preferably be duplicated on manilla, but if this is not available, use ordinary paper.

4.1.5 LEARNER SECTION

4.1.6 Content

4.1.6.1 ACTIVITY: Numbers [LO 1.3, LO 1.5, LO 1.6, LO 1.9, LO 3.6, LO 4.5]

Bonny and **Tommy** are very excited about the fête. There will be many different kinds of stalls and lots of fun activities to take part in, including clowns to entertain the people.

- Draw a picture to show what your school will look like when you have the fête. Decide beforehand which stalls, fun and games there will be and where they will be placed.
- **Bonny** and **Tommy** know their numbers to **1 000** and now they want to count further.
- Complete the number block.

1001	1002	1003	1004	1005	1006	1007	1008	1009	1010
1011	1012								1020
1021									
1031									
1041									
1051									
1061									
1071									
1081									
1091									

Table 4.1

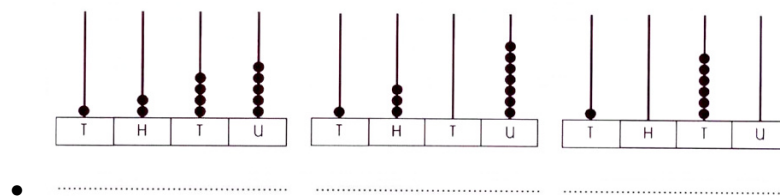


Figure 4.1

Which **numbers** are represented by the diagrams?

- Write the **number names** of the numbers.

- **Bonny** and **Tommy** must be able to calculate quickly if they want to help at the stalls.

Think!

$4 \times 10 = \underline{\hspace{2cm}}$	$4 \times 100 = \underline{\hspace{2cm}}$	$45 \div 5 = \underline{\hspace{2cm}}$
$5 \times 2 = \underline{\hspace{2cm}}$	$5 \times 20 = \underline{\hspace{2cm}}$	$32 \div 4 = \underline{\hspace{2cm}}$
$6 \times 3 = \underline{\hspace{2cm}}$	$6 \times 30 = \underline{\hspace{2cm}}$	$24 \div 3 = \underline{\hspace{2cm}}$
$10 \times 10 = \underline{\hspace{2cm}}$	$10 \times 100 = \underline{\hspace{2cm}}$	$80 \div 10 = \underline{\hspace{2cm}}$
$4 \times 7 = \underline{\hspace{2cm}}$	$4 \times 70 = \underline{\hspace{2cm}}$	$16 \div 4 = \underline{\hspace{2cm}}$
$6 \times 5 = \underline{\hspace{2cm}}$	$6 \times 50 = \underline{\hspace{2cm}}$	$35 \div 5 = \underline{\hspace{2cm}}$
$4 \times 9 = \underline{\hspace{2cm}}$	$4 \times 90 = \underline{\hspace{2cm}}$	$100 \div 10 = \underline{\hspace{2cm}}$
$5 \times 3 = \underline{\hspace{2cm}}$	$5 \times 30 = \underline{\hspace{2cm}}$	$9 \div 3 = \underline{\hspace{2cm}}$
$3 \times 7 = \underline{\hspace{2cm}}$	$3 \times 70 = \underline{\hspace{2cm}}$	$40 \div 5 = \underline{\hspace{2cm}}$
$2 \times 8 = \underline{\hspace{2cm}}$	$2 \times 80 = \underline{\hspace{2cm}}$	$12 \div 4 = \underline{\hspace{2cm}}$

Calculate the change for R1, R2 and R5:

R1 - 20c = <u> </u>	R2 - 50c = <u> </u>	R5 - 25c = <u> </u>
R1 - 50c = <u> </u>	R2 - 75c = <u> </u>	R5 - 92c = <u> </u>
R1 - 29c = <u> </u>	R2 - 34c = <u> </u>	R5 - 57c = <u> </u>
R1 - 73c = <u> </u>	R2 - R1,90 = <u> </u>	R5 - R1,40 = <u> </u>
R1 - 85c = <u> </u>	R2 - R1,25 = <u> </u>	R5 - R2,70 = <u> </u>
R1 - 46c = <u> </u>	R2 - R1,10 = <u> </u>	R5 - R2,15 = <u> </u>
R1 - 52c = <u> </u>	R2 - R1,47 = <u> </u>	R5 - R3,29 = <u> </u>
R1 - 94c = <u> </u>	R2 - R1,76 = <u> </u>	R5 - R3,03 = <u> </u>
R1 - 68c = <u> </u>	R2 - R1,58 = <u> </u>	R5 - R4,81 = <u> </u>
R1 - 7c = <u> </u>	R2 - R1,99 = <u> </u>	R5 - R4,48 = <u> </u>

Calculate the change for R10, R20 and R50:

R10 - R7 = <u> </u>	R20 - R 6 = <u> </u>	R50 - R 8 = <u> </u>
R10 - R2 = <u> </u>	R20 - R 3 = <u> </u>	R50 - R16 = <u> </u>
R10 - R4 = <u> </u>	R20 - R12 = <u> </u>	R50 - R25 = <u> </u>
R10 - R9 = <u> </u>	R20 - R17 = <u> </u>	R50 - R39 = <u> </u>
R10 - R5 = <u> </u>	R20 - R 5,50 = <u> </u>	R50 - R42 = <u> </u>
R10 - R6,50 = <u> </u>	R20 - R 3,40 = <u> </u>	R50 - R12,50 = <u> </u>
R10 - R8,20 = <u> </u>	R20 - R18,80 = <u> </u>	R50 - R36,50 = <u> </u>
R10 - R3,70 = <u> </u>	R20 - R11,09 = <u> </u>	R50 - R24,90 = <u> </u>
R10 - R2,75 = <u> </u>	R20 - R14,75 = <u> </u>	R50 - R46,95 = <u> </u>
R10 - R9,15 = <u> </u>	R20 - R19,29 = <u> </u>	R50 - R39,99 = <u> </u>

Figure 4.2

- **Bonny** will help Mom with the pancakes. Here is 1 of the containers for the pancake mixture.
- The mixture in the container is enough for 100 pancakes. They planned to make 500 pancakes. Draw all the containers that they will need for the mixture.

They need ℓ dough altogether.

- How many $\frac{1}{2}\ell$ (500 mL) containers can be filled with the mixture?

-
- They are selling the pancakes for R2 each. How much money will they make if they sell all the pancakes?

-
- We know that 10ℓ of mixture makes 100 pancakes. How many pancakes can we make from 1ℓ of mixture?
-

4.1.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.3: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;

Assessment Standard 1.5: We know this when the learner recognises the place value of digits in whole numbers to at least 3-digit numbers;

Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

Assessment Standard 3.6: We know this when the learner reads, interprets and draws informal maps of the school environment or of an arrangement of three-dimensional objects and locates objects on the map.

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.5: We know this when the learner estimates, measures, compares and orders three-dimensional objects using non-standard and standard measures.

4.2 Calculations²

4.2.1 MATHEMATICS

4.2.2 Bonny and Tommy's school fête

4.2.3 EDUCATOR SECTION

4.2.4 Memorandum

It is imperative that the educator is familiar with the content of this module before it is given to the learners, as this module contains advanced and enrichment work. Learners in the first two groups should find it a challenge and should be able to cope with it. Do not expose learners to tasks that are too difficult for them and which frustrate them. (Select according to their abilities).

The activities, the construction of mobiles, can be done classically. They can be combined with Technology.

- **Number Concept** to 1 500
- **Operations:**
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²This content is available online at <<http://cnx.org/content/m32312/1.1/>>.

In **Module 7** number concept is extended to 1500. All addition, subtraction and multiplication calculations are performed with 2-digit and 3-digit numbers with and without regrouping of hundreds and tens. Division is only done with 2-digit numbers with regrouping of tens, with a remainder e.g. $66 \div 4 =$

A discussion about the fête is necessary beforehand so that the learners may order their thoughts and plan the picture.

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Use the posters for more calculations and provide opportunities for the learners to ask one another to do certain calculations.

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These involve consolidation of operations. Attend to problem areas.

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Encourage learners to test their operations.

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The shapes should preferably be duplicated on manilla, but if this is not available, use ordinary paper.

4.2.5 LEARNER SECTION

4.2.6 Content

4.2.6.1 ACTIVITY: Calculations [LO 1.6, LO 1.8, LO 4.6, LO 5.5]

- Here is the poster that **Bonny** made to attract the people to their stalls.

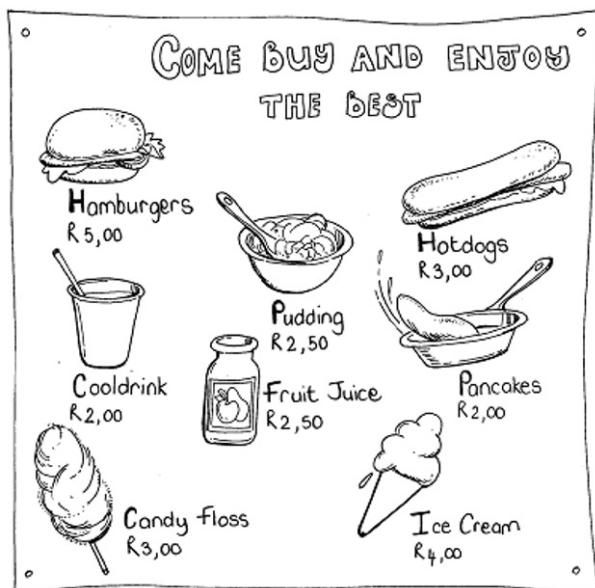


Figure 4.3

- Calculate the costs:

Mary bought: 3 pancakes, 1 hotdog and 2 cool drinks.

She paid _____

Terry bought: 2 hamburgers, 2 candy floss and 2 fruit juices.

He paid _____

Mom bought: 4 hotdogs, 4 puddings and 4 ice creams.

She paid _____

The twins bought: 4 pancakes, 2 fruit juices en 2 candy floss.

They paid _____

They planned to make **300hamburgers**. They will sell at **R5** each. **10 meatballs** can be made from **1 kg** of mince. The mince is packed in **5 kg - packs**.

- Complete the table:

packs of mince	1	2	3	4		
kg	5	10				
meat balls	50	100				
R_____ altogether	250	500				

Table 4.2

- How many 5 kg-packs must they buy? _____ packs.
- If 1 kg of mince is needed for 10 meatballs, how many grams are needed for each meatball? _____

The **sausages** for the hotdogs were packed in **3 kg-packs**. Each **3 kg-pack** is enough for **25 hotdogs**. They bought **8** such packs. The hotdogs will be sold at **R3** each.

- Complete the table:

packs of sausage	1	2	3	4	5	6	7	8
kg	3	6	9					
hotdogs	25	50						
R_____ altogether	75	150						

Table 4.3

- How many hotdogs will they make? _____ hotdogs.
- How much **money** will the hamburgers and the hotdogs bring in?

- What is the difference between the amount of money made from the hamburgers and that from the hotdogs? _____

Tommy decided to help Dad with the pony rides. Here is the track that they measured off on the rugby field.

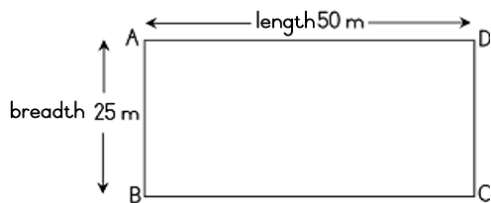


Figure 4.4

- What is the **perimeter** of the track?

One ride takes the pony twice around the track. It takes the pony 5 minutes to go round twice and to have a short rest.

- What distance will the pony cover for each ride?
- How many rides can the pony do in 1 hour?
- They are going to pay R5 per ride. How much money will they make if 50 children have pony rides?
- Who can calculate how far the pony will have walked altogether?

- Here is **Tommy's** poster.



Figure 4.5

Calculate how much some children paid for the fun.

- Bonny had 2 pony rides and 1 turn on the jumping castle.

She paid _____

- Tommy had 3 turns to shoot the air gun and 1 pony ride.

He paid _____

- Terry threw the balls twice and had 1 pillow fight.

She paid _____

- Shane did everything **once**.

He paid _____

- Robert did everything **twice**.

He paid _____

- How much will you pay if you do everything 5 times?

4.2.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents;

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.6: We know this when the learner investigates (alone and/or as a member of a group or team) and approximates;

Learning Outcome 5: The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

Assessment Standard 5.5: We know this when the learner reads and interprets data presented in simple tables and lists.

4.3 Language, calculations and time³

4.3.1 MATHEMATICS

4.3.2 Bonny and Tommy's school fête

4.3.3 EDUCATOR SECTION

4.3.4 Memorandum

It is imperative that the educator is familiar with the content of this module before it is given to the learners, as this module contains advanced and enrichment work. Learners in the first two groups should find it a challenge and should be able to cope with it. Do not expose learners to tasks that are too difficult for them and which frustrate them. (Select according to their abilities).

The activities, the construction of mobiles, can be done classically. They can be combined with Technology.

- **Number Concept** to 1 500
- **Operations:**
- **Addition, subtraction and multiplication** – two and three digit numbers with and without regrouping of the tens and the hundreds;
- **Division** – two digit numbers with regrouping of the **tens and remainders**, e.g. $66 \div 4 =$

In **Module 7** number concept is extended to 1500. All addition, subtraction and multiplication calculations are performed with 2-digit and 3-digit numbers with and without regrouping of hundreds and tens. Division is only done with 2-digit numbers with regrouping of tens, with a remainder e.g. $66 \div 4 =$

A discussion about the fête is necessary beforehand so that the learners may order their thoughts and plan the picture.

The learners must understand counting onwards from one thousand very well. Use similar number blocks from **1 101 to 1200, 1201 to 1300, 1301 to 1400 and 1401 to 1500** if necessary.

Shopping games should be used to help learners to calculate change.

Give special attention to equal quantities of and mℓ.

Use the posters for more calculations and provide opportunities for the learners to ask one another to do certain calculations.

³This content is available online at <<http://cnx.org/content/m32315/1.1/>>.

This is an activity to be done on the playground. Let the learners measure with a trundle wheel.

Learners are expected to be able to count in a language other than their home language. If there are learners in the class who are proficient in another language, they should be given the opportunity to do so.

These involve consolidation of operations. Attend to problem areas.

The calculations of fractions of numbers may cause problems for some learners. Encourage them to try, even if they only accomplish the easier ones.

The $8x$ and \div are done simultaneously with **eights**. It is not compulsory for them to know these.

Multiplication is done with regrouping of hundreds as well as tens.

This activity tests the learners' knowledge of numbers and reasoning abilities.

Division with regrouping the tens and a remainder requires much practice in the concrete. Learners must be able to say how they think and what they are doing before they attempt written work. Much practice is needed.

Encourage learners to test their operations.

This activity cannot be completed in one day. It can be combined with Technology. If there is not enough time, learners can be divided into groups of 5 to allow each learner to complete 1 shape, in which case the group will make a collective mobile sharing all knowledge with one another. If they find folding and pasting the round edges of the cone and cylinder they can paste these on the outside or they can cut off the round edges.

The shapes should preferably be duplicated on manilla, but if this is not available, use ordinary paper.

4.3.5 LEARNER SECTION

4.3.6 Content

4.3.6.1 ACTIVITY: Language, calculations and time [LO 1.2, LO 1.4, LO 1.8, LO 1.9, LO 1.10, LO 2.2, LO 4.1, LO 4.2]

Bonnie en Tommie het baie Engelssprekende maats en wil graag leer om in Engels te tel. Kom ons help hulle.

1 een	2 twee	3 drie	4 vier	5 vyf
6 ses	7 sewe	8 ag	9 nege	10 tien
11 elf	12 twaalf	13 dertien	14 veertien	15 vyftien
16 sestien	17 sewentien	18 agtien	19 negentien	20 twintig
30 dertig	40 veertig	50 vyftig		
60 sestig	70 sewentig	80 tagtig	90 negentig	100 honderd

They must learn the **number names (getalname)** in Afrikaans.

☺ Use the key above and write the number names in Afrikaans:

23 drie en twintig	47
39	14
71	55
62	24
86	98

☺ Ordinal numbers (**ranggetalle**) from 1 to 10.

1st first	→	1ste eerste	6th sixth	→	6de sesde
2nd second	→	2de tweede	7th seventh	→	7de sewende
3rd third	→	3de derde	8th eighth	→	8ste agste
4th fourth	→	4de vierde	9th ninth	→	9de negende
5th fifth	→	5de vyfde	10th tenth	→	10de tiende

1	2	3	4	5	6	7	8	9	10
@	□	<	%	O	&	#	\$	>	X

☺ Voltooi:

Die % is	Die \$ is
Die X is	Die @ is
Die > is	Die □ is
Die # is	Die O is
Die < is	Die & is

Figure 4.6

Coco, the clown, handed out balloons. Here he is with **Bonny's** balloons.

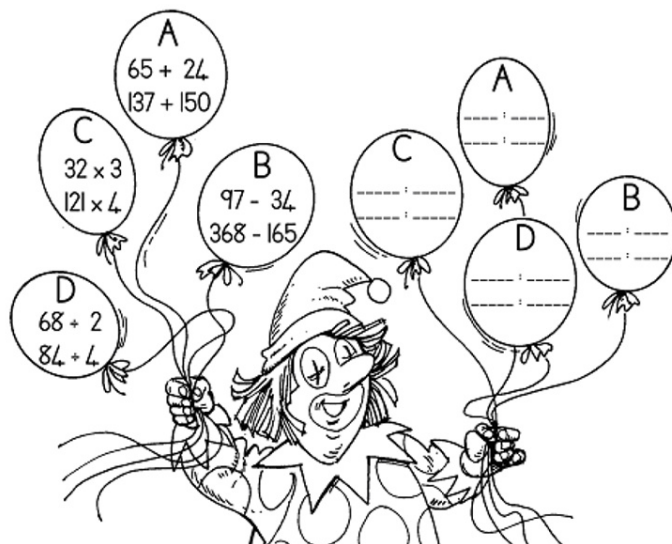


Figure 4.7

- **Do** all the operations on the balloons. **Write** the answers on the balloons in Coco's left hand. **Colour** in each balloon lightly as you complete the operations. **Double** the answers on the balloons.
- Help **Bonny** and **Tommy** to set these clocks correctly. The clocks are **1 hour and 10 minutes slow**.

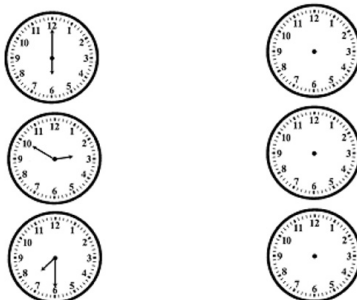


Figure 4.8

- These clocks are **15 minutes fast**.

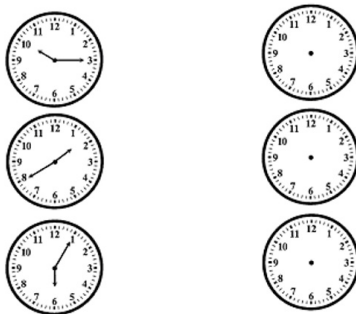


Figure 4.9

- Here is **Coco** with **Tommy's** balloons.

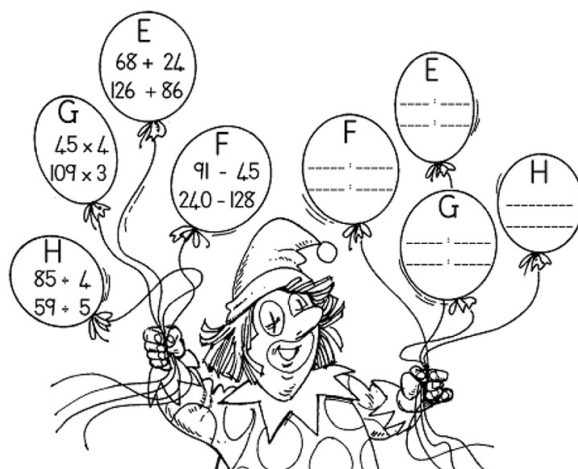


Figure 4.10

Do all the operations on the balloons. **Write** the answers on the balloons in **Coco's** left hand again. **Colour** in each balloon lightly as you complete the operations. **Halve** all the other answers except those on **H**, because there you need the whole line for the answer.

$$\begin{array}{lll}
 \frac{1}{2} \times 12 = ______ & \frac{1}{2} \times 36 = ______ & \frac{1}{2} \times 94 = ______ \\
 \frac{1}{2} \times 120 = ______ & \frac{1}{2} \times 360 = ______ & \frac{1}{2} \times 940 = ______ \\
 \\
 \frac{1}{4} \times 16 = ______ & \frac{1}{4} \times 48 = ______ & \frac{1}{4} \times 100 = ______ \\
 \frac{1}{4} \times 160 = ______ & \frac{1}{4} \times 480 = ______ & \frac{1}{4} \times 1000 = ______ \\
 \frac{3}{4} \times 160 = ______ & \frac{3}{4} \times 480 = ______ & \frac{3}{4} \times 1000 = ______ \\
 \\
 \frac{1}{3} \times 15 = ______ & \frac{1}{3} \times 150 = ______ & \frac{1}{3} \times 1500 = ______ \\
 \frac{2}{3} \times 15 = ______ & \frac{2}{3} \times 150 = ______ & \frac{2}{3} \times 1500 = ______ \\
 \\
 \frac{1}{5} \times 25 = ______ & \frac{1}{5} \times 250 = ______ & \frac{1}{5} \times 2500 = ______ \\
 \frac{2}{5} \times 25 = ______ & \frac{3}{5} \times 250 = ______ & \frac{4}{5} \times 2500 = ______ \\
 \\
 \frac{1}{10} \times 20 = ______ & \frac{1}{10} \times 200 = ______ & \frac{1}{10} \times 2000 = ______ \\
 \frac{3}{10} \times 20 = ______ & \frac{5}{10} \times 200 = ______ & \frac{7}{10} \times 2000 = ______
 \end{array}$$

Figure 4.11

Calculate:

- Divide these 2 shapes into 8 equal parts (eighths).

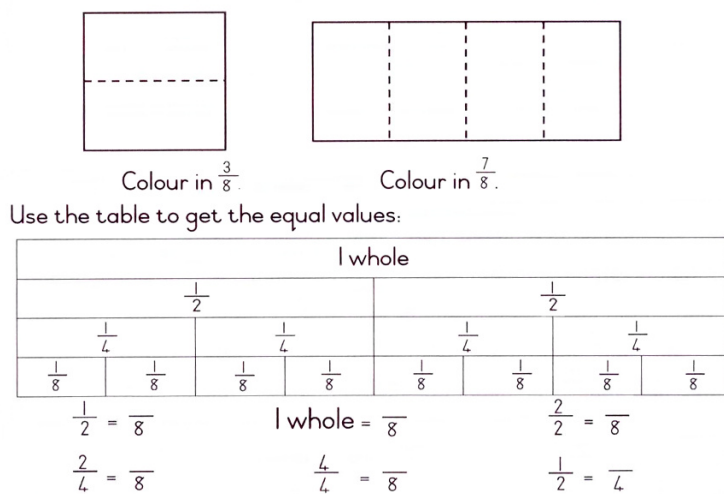


Figure 4.12

-
- Use your multiples' chart in Module 2 and practise counting forwards and backwards in 8's until the 10th multiple.

You will notice that you already know more than half of the multiples:

$8 \times 1 = 1 \times 8 = 8$	$8 \div 8 = 1$	$8 \div 1 = 8$
$8 \times 2 = 2 \times 8 = 16$	$16 \div 8 = 2$	$16 \div 2 = 8$
$8 \times 3 = 3 \times 8 = \underline{\hspace{1cm}}$	$24 \div 8 = \underline{\hspace{1cm}}$	$24 \div \underline{\hspace{1cm}} = 8$
$8 \times 4 = 4 \times 8 = \underline{\hspace{1cm}}$	$32 \div 8 = \underline{\hspace{1cm}}$	$32 \div \underline{\hspace{1cm}} = 8$
$8 \times 5 = \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$	$40 \div 8 = \underline{\hspace{1cm}}$	$40 \div \underline{\hspace{1cm}} = 8$
$8 \times 6 = \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$	$48 \div 8 = \underline{\hspace{1cm}}$	$48 \div \underline{\hspace{1cm}} = 8$
$8 \times 7 = \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$	$56 \div 8 = \underline{\hspace{1cm}}$	$56 \div \underline{\hspace{1cm}} = 8$
$8 \times 8 = \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$	$64 \div 8 = \underline{\hspace{1cm}}$	$64 \div \underline{\hspace{1cm}} = 8$
$8 \times 9 = \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$	$72 \div 8 = \underline{\hspace{1cm}}$	$72 \div \underline{\hspace{1cm}} = 8$
$8 \times 10 = \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$	$80 \div 8 = \underline{\hspace{1cm}}$	$80 \div \underline{\hspace{1cm}} = 8$

New!

New!

Here is a method to help you to learn them quicker:

Double		Double again		Double again	
$2 \times 6 = 12$	$4 \times 6 = 24$	$8 \times 6 = 48$			
$2 \times 7 = \underline{\hspace{1cm}}$	$4 \times 7 = \underline{\hspace{1cm}}$	$8 \times 7 = \underline{\hspace{1cm}}$			
$2 \times 8 = \underline{\hspace{1cm}}$	$4 \times 8 = \underline{\hspace{1cm}}$	$8 \times 8 = \underline{\hspace{1cm}}$			
$2 \times 9 = \underline{\hspace{1cm}}$	$4 \times 9 = \underline{\hspace{1cm}}$	$8 \times 9 = \underline{\hspace{1cm}}$			

Halve		Halve again		Halve again	
$48 \div 2 = 24$	$48 \div 4 = 12$	$48 \div 8 = 6$			
$56 \div 2 = \underline{\hspace{1cm}}$	$56 \div 4 = \underline{\hspace{1cm}}$	$56 \div 8 = \underline{\hspace{1cm}}$			
$64 \div 2 = \underline{\hspace{1cm}}$	$64 \div 4 = \underline{\hspace{1cm}}$	$64 \div 8 = \underline{\hspace{1cm}}$			
$72 \div 2 = \underline{\hspace{1cm}}$	$72 \div 4 = \underline{\hspace{1cm}}$	$72 \div 8 = \underline{\hspace{1cm}}$			

☺ Calculate:

$\frac{1}{8} \times 16 = 2$	$\frac{1}{8} \times 40 = 5$	$\frac{1}{8} \times 80 = 10$
$\frac{2}{8} \times 16 = \underline{\hspace{1cm}}$	$\frac{2}{8} \times 40 = \underline{\hspace{1cm}}$	$\frac{2}{8} \times 80 = \underline{\hspace{1cm}}$
$\frac{3}{8} \times 16 = \underline{\hspace{1cm}}$	$\frac{3}{8} \times 40 = \underline{\hspace{1cm}}$	$\frac{3}{8} \times 80 = \underline{\hspace{1cm}}$
$\frac{5}{8} \times 16 = \underline{\hspace{1cm}}$	$\frac{5}{8} \times 40 = \underline{\hspace{1cm}}$	$\frac{5}{8} \times 80 = \underline{\hspace{1cm}}$
$\frac{7}{8} \times 16 = \underline{\hspace{1cm}}$	$\frac{7}{8} \times 40 = \underline{\hspace{1cm}}$	$\frac{7}{8} \times 80 = \underline{\hspace{1cm}}$

Figure 4.13

- Complete the sequence and say what you have done:

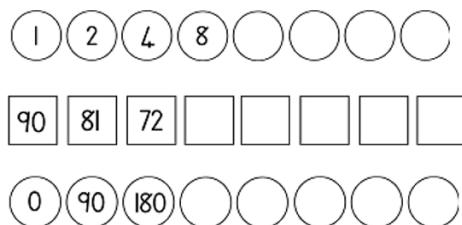


Figure 4.14

- Draw a **circle** around all the **even numbers** and a **block** around all the **uneven numbers**:

1229 1006 1040 1445 1238 1441
1544 1500 1337 1002 1223 1335

- Arrange the **even numbers** from the **least to the most**:
- Arrange the **uneven numbers** from the **most to the least**:

Number:	Rename:	Regroup:
1237 = _____ + _____ + _____ + _____ = _____ + _____ + _____ + _____ 1058		
= _____ + _____ + _____ + _____ = _____ + _____ + _____ + _____ 1304 =		
_____ + _____ + _____ + _____ = _____ + _____ + _____ + _____		

Table 4.4

- Write the number names of the above numbers:

- Here is **Coco** with **Terry's** balloons.

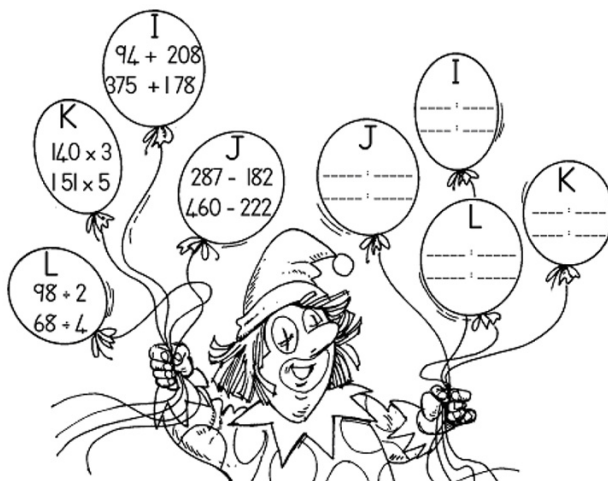


Figure 4.15

- Do the operations on the balloons. Write the answers on the balloons in Coco's left hand. Colour in the balloons lightly as you complete the operation. Make each answer 12 more.

4.3.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.2: We know this when the learner knows number names from 1 to at least 10 in the mother tongue (if not the language of learning and teaching) and one other local language;

Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers;

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;

1.10.2 doubling and halving;

1.10.3 number-lines;

1.10.4 rounding off in tens.

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.2: We know this when the learner copies and extends simple number sequences to at least 1 000.

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.1: We know this when the learner reads and writes analogue and digital clock time in terms of hours, half-hours, quarters of an hour and minutes;

Assessment Standard 4.2: We know this when the learner solves problems involving calculations with and conversions.

4.4 Multiplication and division⁴

4.4.1 MATHEMATICS

4.4.2 Bonny and Tommy's school fête

4.4.3 EDUCATOR SECTION

4.4.4 Memorandum

It is imperative that the educator is familiar with the content of this module before it is given to the learners, as this module contains advanced and enrichment work. Learners in the first two groups should find it a challenge and should be able to cope with it. Do not expose learners to tasks that are too difficult for them and which frustrate them. (Select according to their abilities).

The activities, the construction of mobiles, can be done classically. They can be combined with Technology.

Number Concept to 1 500

Operations:

- Addition, subtraction and multiplication – two and three digit numbers with and without regrouping of the tens and the hundreds;
- Division – two digit numbers with regrouping of the tens and remainders,
- e.g. $66 \div 4 =$

In Module 7 number concept is extended to 1500. All addition, subtraction and multiplication calculations are performed with 2-digit and 3-digit numbers with and without regrouping of hundreds and tens. Division is only done with 2-digit numbers with regrouping of tens, with a remainder e.g. $66 \div 4 =$

A discussion about the fête is necessary beforehand so that the learners may order their thoughts and plan the picture.

The learners must understand counting onwards from one thousand very well. Use similar number blocks from 1 101 to 1200, 1201 to 1300, 1301 to 1400 and 1401 to 1500 if necessary.

Shopping games should be used to help learners to calculate change.

Give special attention to equal quantities of and mℓ.

Use the posters for more calculations and provide opportunities for the learners to ask one another to do certain calculations.

This is an activity to be done on the playground. Let the learners measure with a trundle wheel.

Learners are expected to be able to count in a language other than their home language. If there are learners in the class who are proficient in another language, they should be given the opportunity to do so.

These involve consolidation of operations. Attend to problem areas.

The calculations of fractions of numbers may cause problems for some learners. Encourage them to try, even if they only accomplish the easier ones.

The $8x$ and \div are done simultaneously with eights. It is not compulsory for them to know these.

Multiplication is done with regrouping of hundreds as well as tens.

This activity tests the learners' knowledge of numbers and reasoning abilities.

Division with regrouping the tens and a remainder requires much practice in the concrete. Learners must be able to say how they think and what they are doing before they attempt written work. Much practice is needed.

Encourage learners to test their operations.

This activity cannot be completed in one day. It can be combined with Technology. If there is not enough time, learners can be divided into groups of 5 to allow each learner to complete 1 shape, in which case the group will make a collective mobile sharing all knowledge with one another. If they find folding and pasting

⁴This content is available online at <<http://cnx.org/content/m32456/1.1/>>.

the round edges of the cone and cylinder they can paste these on the outside or they can cut off the round edges.

The shapes should preferably be duplicated on manilla, but if this is not available, use ordinary paper.

4.4.5 LEARNER SECTION

4.4.6 Content

4.4.6.1 ACTIVITY: Multiplication and division [LO 1.1, LO 1.8, LO 1.8, LO 1.10]

- The 3 ladies baking the pancakes have already each finished 142.
- How many did they bake altogether?

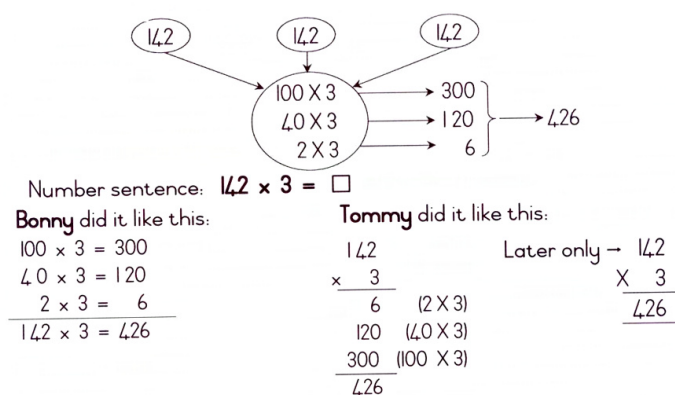


Figure 4.16

Use the method that you prefer to solve these problems.

- Dad, Mom, Bonny and Tommy each collected R94 for the school. What is the total amount that they collected altogether?
- Tommy and Robby each picked up 157 empty cool drink tins to throw into the bin. How many tins did they pick up altogether?
- Write your own story to match the number sentence. Do the operations.

$$86 \times 3 = \underline{\hspace{2cm}}$$

$$136 \times 5 = \underline{\hspace{2cm}}$$

- Complete:

$\begin{array}{r} 26 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 39 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 24 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 19 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 24 \\ \times 3 \\ \hline \end{array}$
$\begin{array}{r} 38 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 26 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 43 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 79 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 54 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 35 \\ \times 5 \\ \hline \end{array}$
$\begin{array}{r} 142 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 131 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 140 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 154 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 152 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 293 \\ \times 3 \\ \hline \end{array}$
$\begin{array}{r} 122 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 136 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 196 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 107 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 284 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 165 \\ \times 3 \\ \hline \end{array}$

Figure 4.17

The school has collected a lot of money and we must help them count it.

R 2	1062	1064	.....	.....	.....	.....	1076
R 5	1250	1255	.....	.....	.....	.....	1285
R 10	1360	1370	.....	.....	.....	.....	1430
R 20	940	960	.....	.....	.....	.....	1080
R 50	800	850	.....	.....	.....	.....	1150
R1 00	600	700	.....	.....	.....	.....	1300
R200	100	300	.....	.....	.....	.....	1500

☹ As the money is paid out we must count backwards.

R 2	1099	1097	.....	.....	.....	.....	1085
R 5	1500	1495	.....	.....	.....	.....	1465
R 10	1120	1110	.....	.....	.....	.....	1050
R 20	1300	1280	.....	.....	.....	.....	1160
R 50	1500	1450	.....	.....	.....	.....	1150
R1 00	1500	1400	.....	.....	.....	.....	800
R200	1400	1200	.....	.....	.....	.....	0

Figure 4.18

☺ **Double:**

500 : 535 : 550 :
 610 : 723 : 748 :

☺ **Halve:**

1200 : 1008 : 1246 :
 1500 : 1310 : 1162 :

☺ **Make each number 6 more:**

1200 : 1004 : 1355 :
 1109 : 1458 : 1399 :

☺ **Make each number 10 less:**

1175 : 1086 : 1403 :

Figure 4.19

Operations:

Addition: We find the sum or the total.

Subtraction: We find the difference.

Multiplication: We find the product.

Division: We find the quotient.

- Complete the sentences with the correct answers:

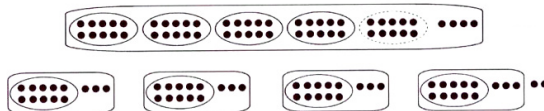
- The total of 19, 10 and 25 is
- The difference between 45 and 54 is
- The product of 23 and 4 is
- The quotient of 36 and 2 is
- The half of 96 is
- Thirty five is the half of
- One hundred and twenty five doubled is
- Eight quarters are wholes.
- The sum of two numbers is 145. The one number is 115 and the other number is

Draw a x next to the correct word:	True	False
The half of 125 is $62\frac{1}{2}$.		
1 010 comes before 1 001		
6 tens + 8 units + 2 hundreds is 682		
(A quarter of 12) x 100 = 300		
1 049 > 1 409		
$(\frac{1}{2} \times 100) + (\frac{1}{2} \times 1\,000) + (\frac{1}{2} \times 10) = 555$		

Table 4.5

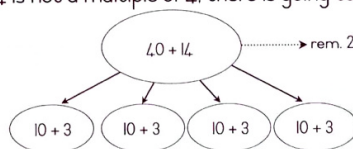
- Dad has 54 marbles and he wants to divide them equally among 4 boys. How many marbles will each get and how many will be left over?

Dad has 54 marbles and he wants to divide them equally among 4 boys.
How many marbles will each get and how many will be left over?



Number sentence: $54 \div 4 = \square$

Regroup: $40 + 14$ (14 is not a multiple of 4, there is going to be a remainder).



Bonny did it like this:

$$\begin{array}{r} 40 \div 4 = 10 \\ 14 \div 4 = 3 \text{ rem. } 2 \\ 54 \div 4 = 13 \text{ rem. } 2 \end{array}$$

Tommy did it like this:

$$\begin{array}{r} 13 \text{ rem. } 2 \\ 4 \overline{)54} \\ \underline{- 40} \quad \text{(shared out)} \\ 14 \quad \text{(regroup with units)} \\ \underline{- 12} \quad \text{(shared out)} \\ 2 \quad \text{(left over)} \end{array}$$

Later only — $\begin{array}{r} 13 \text{ rem. } 2 \\ 4 \overline{)54} \end{array}$

Each one gets 13 marbles and 2 are left over.

Figure 4.20

Ø I always test my answers by doing the opposite operation.

Ø I test a division operation with a multiplication.

4.4.7 Assessment

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Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

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1.10.2 doubling and halving;

1.10.3 number-lines;

1.10.4 rounding off in tens.

4.5 Make your own collective mobile⁵

4.5.1 MATHEMATICS

4.5.2 Bonny and Tommy's school fête

4.5.3 EDUCATOR SECTION

4.5.4 Memorandum

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- **Operations:**
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⁵This content is available online at <<http://cnx.org/content/m32335/1.1/>>.

The shapes should preferably be duplicated on manilla, but if this is not available, use ordinary paper.

4.5.5 LEANER SECTION

4.5.6 Content

4.5.6.1 ACTIVITY: Make your own collective mobile [LO 3.1, LO 3.2]

- These **3-D shapes** have been cut open. Do you recognise them? They have been enlarged on the next pages. Follow the instructions and make your own mobile for your room.

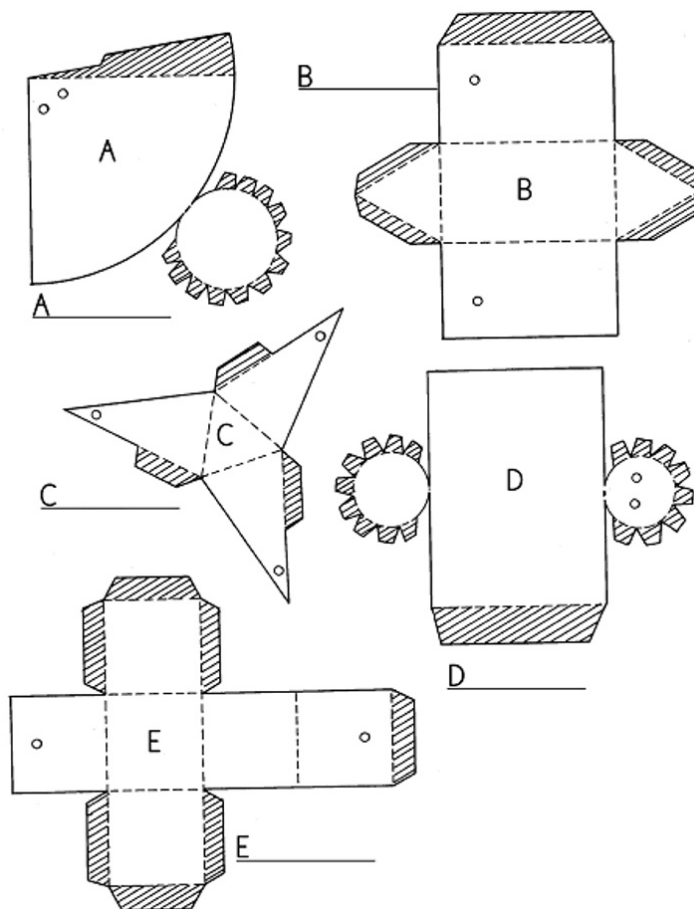


Figure 4.21

- Complete one shape at a time.

Instructions for all 5 shapes:

1. Write your name lightly on all the shapes.

2. **Cut** out 1 of the shapes neatly **along the outlines** (black lines).
3. **Punch holes** where it is marked with a **o**.
4. **Decorate** the **outside** of the shape with your own patterns.
5. **Fold** along all the **dotted lines**.
6. **Mark the grey sections**. These must be folded over so that they can be pasted down.

Practise the folding over before you glue them.

1. **Apply glue** onto one grey section at a time and paste it.
2. **Complete** the shape and **leave** it for the glue to dry.
3. **Follow** the same **steps** until all the shapes have been completed.
4. **Match** the 3-D shapes to the 2-D shapes on p. 23 and **write** their names.
5. **Tie** a piece of thin **fishing-line** to every shape.

12. **Tie** the shapes **to** a **small plank** and there **hangs** your **mobile**!

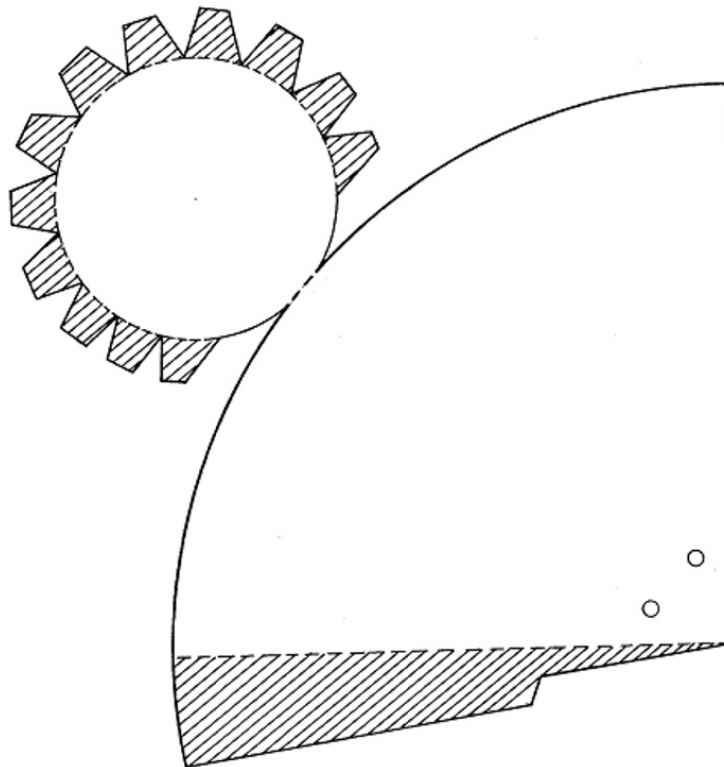


Figure 4.22

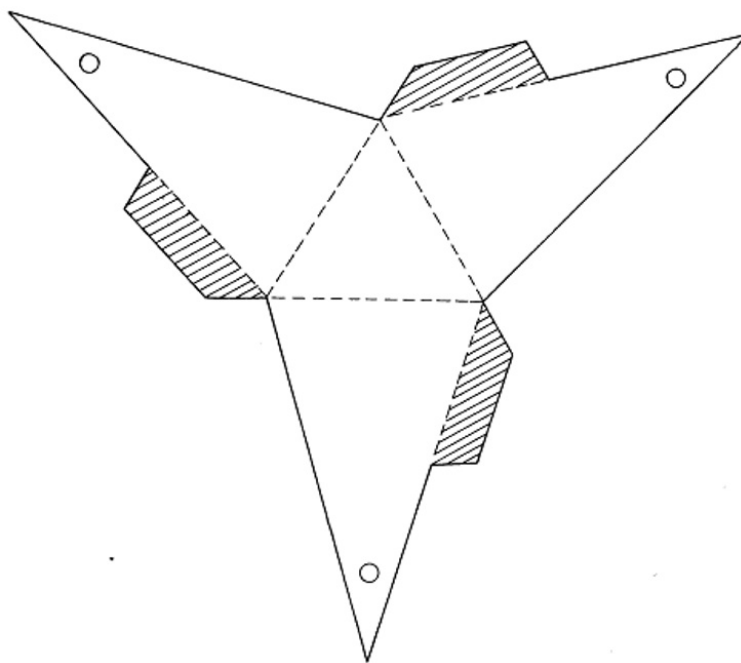


Figure 4.23

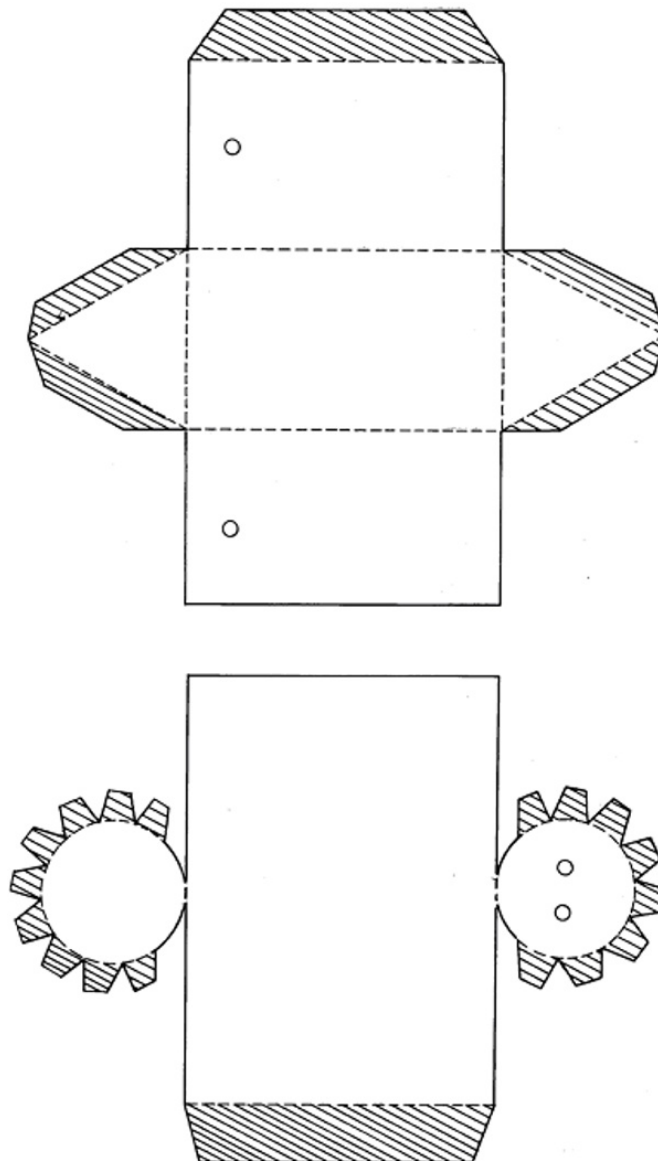


Figure 4.24

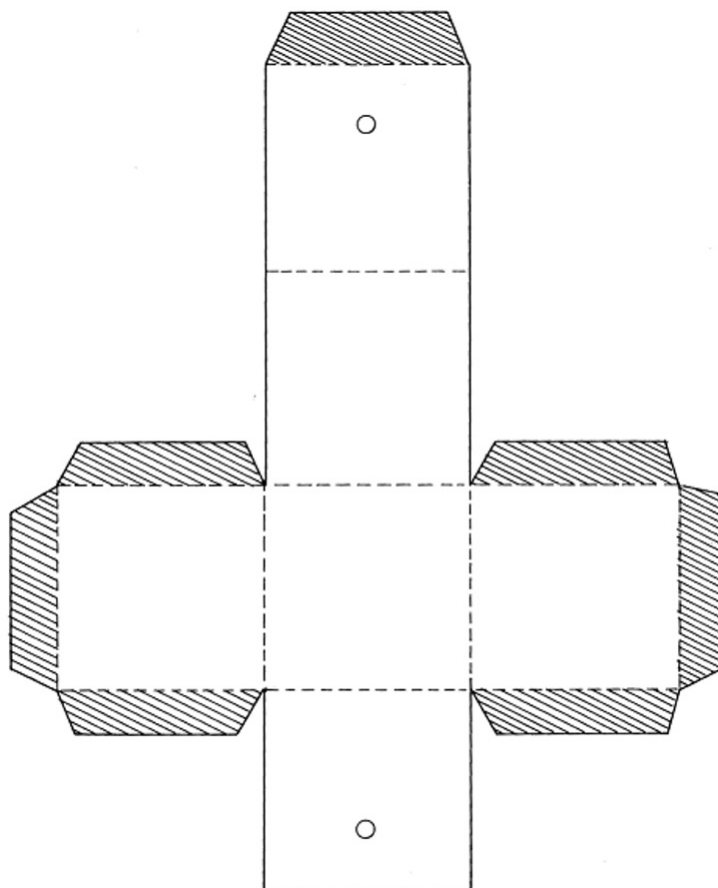


Figure 4.25

4.5.7 Assesement

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

Assessment Standard 3.1: We know this when the learner recognises, identifies and names two-dimensional shapes and three-dimensional objects in the environment and in pictures;

Assessment Standard 3.2: We know this when the learner describes, sorts and compares two-dimensional shapes and three-dimensional objects in pictures and the environment.

4.6 Distance⁶

4.6.1 MATHEMATICS

4.6.2 Bonny and Tommy at the sea

4.6.3 EDUCATOR SECTION

4.6.4 Memorandum

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- **Number concept** to 2 000
- **Operations:** Consolidation and reinforcement of all the operations in previous modules.

A considerable amount of advanced and enrichment work is included and the educator must be familiar with each activity before the learners are expected to complete them.

In **Module 8** number concept is extended to **2 000**. **All operations** are revised and consolidated. Several enrichment and challenging activities are included in this module and should only be given to learners who can manage them and who enjoy challenges. This selection process must be handled carefully and the other learners must not be discouraged or feel inferior towards other learners or the subject Mathematics.

A thorough discussion and explanation of the map on p. 3 as well as the table of distances on p. 4 should help learners complete these worksheets.

Number concept is extended to 2 000.

This is consolidation of the operations as in the previous modules. It offers an opportunity to identify problem areas.

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Telling the time on digital clocks/watches should only be done with learners who have mastered the telling of time on ordinary (analogue) clocks/watches. They need much practice in telling the time on ordinary clocks/watches and the corresponding time on digital clocks/watches before completing the worksheets.

Give the learners the opportunity to do these problems without help so that their progress can be determined.

Show examples and discuss ethnic patterns with the learners. Encourage them to bring examples to school and to share these with the class.

Use this for assessment purposes.

This is enrichment work and the educator should study this work first and then decide which of these worksheets should be used for which learners.

All learners who have progressed to Module 8 should be able to complete these worksheets with ease.

Do this activity practically in the classroom and let several learners explain what they see in front of them when walking behind someone. Let three learners stand next to one another and let the other learners stand in front of them. They must walk around the three standing in a line and observe them from behind so that they can discover that the order from left to right has changed.

Not much explanation is needed here as this activity is similar to the one where they used the table of distances.

⁶This content is available online at <<http://cnx.org/content/m32336/1.1/>>.

4.6.5 LEANER SECTION

4.6.6 Content

4.6.6.1 ACTIVITY: Distance [LO 1.8, LO 3.2, LO 3.6, LO 5.5]

Bonny and **Tommy** are very excited because they always spend December holidays at the sea.

- Draw your own picture of the beach. I want to see what it looks like there and all the things you can do.

Last year **Bonny** and **Tommy** went to **Durban** with Mom and Dad. This year they are going to **Cape Town**. They live in **Kimberley**.

- See whether you can find these places on the map. Mark them.
- Mark the vicinity where you live and write the name of the town or city on the map.
- Is this **near** **toor** **far** from Kimberley?

It is _____.

- With your pencil mark the route on the map clearly that Bonny and her family will take from **Kimberley** to **Cape Town**.
- Write down all the names of the towns along the route you have chosen.

Kimberley _____ Cape
Town.

- Estimate how far **Kimberley** is from **Cape Town**?

I guess it is _____ km.

- Use the **table of distances** on p. 4 and read the distances.

It is _____ km.

- Did you estimate too many, too few or just right?

I guessed _____.

- Look at the map again and estimate:

Is **Durban** nearer or further away from **Kimberley** than **Cape Town**?

I guess _____.

- Read the distance on the table. It is _____ km.
- Calculate the **difference** between the two distances.

4.6.6.1.1 The Republic of South Africa

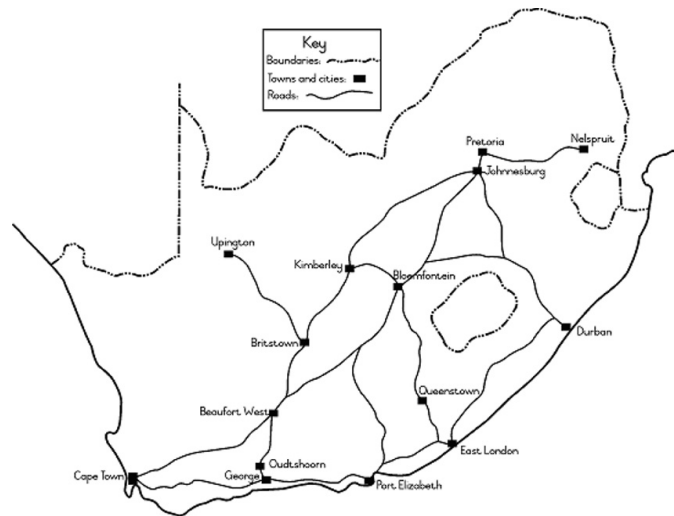
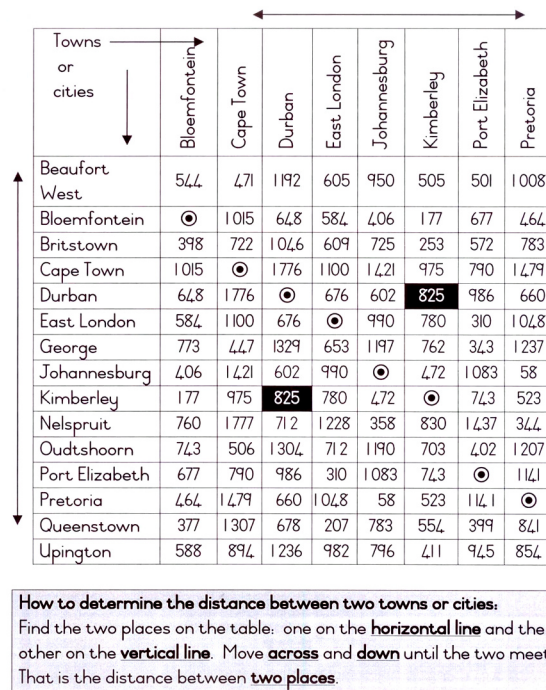


Figure 4.26

- This is a **table/grid of distances** in kilometres showing the approximate distances between two towns or cities.



How to determine the distance between two towns or cities:
Find the two places on the table: one on the **horizontal line** and the other on the **vertical line**. Move **across** and **down** until the two meet. That is the distance between **two places**.

Towns or cities	Bloemfontein	Cape Town	Durban	East London	Johannesburg	Kimberley	Port Elizabeth	Pretoria
Beaufort West	544	471	1192	605	950	505	501	1008
Bloemfontein	●	1015	648	584	406	177	677	464
Britstown	398	722	1046	609	725	253	572	783
Cape Town	1015	●	1776	1100	1421	975	790	1479
Durban	648	1776	●	676	602	825	986	660
East London	584	1100	676	●	990	780	310	1048
George	773	447	1329	653	1197	762	343	1237
Johannesburg	406	1421	602	990	●	472	1083	58
Kimberley	177	975	825	780	472	●	743	523
Nelspruit	760	1777	712	1228	358	830	1437	344
Oudtshoorn	743	506	1304	712	1190	703	402	1207
Port Elizabeth	677	790	986	310	1083	743	●	1141
Pretoria	464	1479	660	1048	58	523	1141	●
Queenstown	377	1307	678	207	783	554	399	841
Uptington	588	894	1236	982	796	411	945	854

Figure 4.27

- The distance between **Kimberley** and **Durban** is coloured in on the table as an example. These cities are **825 km** apart.
- Choose a friend and practise some readings.

Die afstand tussen Kaapstad en Johannesburg is 1 421 km.

The distance between Cape Town and Johannesburg is 1 421 km.

Use the map on p. 3 first to estimate the distances and then look on the table on p. 4 to read the distances. Do it with a friend.

Towns or cities				
Horizontalline	Verticalline	Estimation	Reading	Just right / Too many / Too few
Johannesburg	Pretoria			
Bloemfontein	Beaufort West			
East London	Queenstown			
Port Elizabeth	George			
Pretoria	Nelspruit			
Kimberley	Beaufort West			
Durban	East London			

Table 4.6

- Calculate the sum of the distances between Bloemfontein and Beaufort West, and Port Elizabeth and George.
- We live in Pretoria and Dad works in Johannesburg. How many kilometres does he travel in one day?
- How many kilometres does he travel in five days?
- It took five hours to travel the distance between Kimberley and Beaufort West. How many kilometres did we travel in one hour?

4.6.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

Assessment Standard 3.2: We know this when the learner describes, sorts and compares two-dimensional shapes and three-dimensional objects in pictures and the environment.

Assessment Standard 3.6: We know this when the learner reads, interprets and draws informal maps of the school environment or of an arrangement of three-dimensional objects and locates objects on the map.

Learning Outcome 5: The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

Assessment Standard 5.5: We know this when the learner reads and interprets data presented in simple tables and lists.

4.7 Number concept⁷

4.7.1 MATHEMATICS

4.7.2 Bonny and Tommy at the sea

4.7.3 EDUCATOR SECTION

4.7.4 Memorandum

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⁷This content is available online at <<http://cnx.org/content/m32338/1.1/>>.

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Not much explanation is needed here as this activity is similar to the one where they used the table of distances.

4.7.5 LEARNER SECTION

4.7.6 Content

4.7.6.1 ACTIVITY: Number concept [LO 1.1, LO 1.3, LO 1.4, LO 1.5, LO 1.6, LO 1.7, LO 1.8, LO 1.1, LO 1.9, LO 1.10, LO 4.2]

Bonny and **Tommy** would like to know the numbers to 2 000 before they go to Grade 4 next year.

- Use the information on the previous page and fill in the distance below.
- Then do the three different calculations with every distance.

Distance	Double	100 km less	Round off to the nearest 10

Table 4.7

- Complete:

1 510	1 520	1 530	1 540	1 550	1 560				1 600
1 610									1 700
	1 720							1 790	
		1 830							1 900
				1 950					
100	200	300						900	
			1 400				1 800		

Table 4.8

- Which numbers are represented by these diagrams?

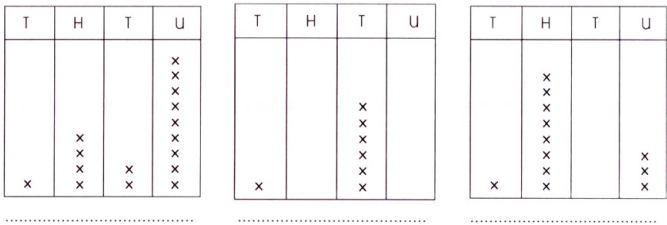


Figure 4.28

- Write the number names:

1 690: _____
1 804: _____
1 999: _____

- Write 12 **four-digit numbers** which you can make using 1, 2, 3 and 4 and draw a circle around the greatest and smallest number:

- Write the even numbers in the oval and the uneven numbers in the rectangle.



Figure 4.29

-
- Choose **two even numbers** and **two uneven numbers** and halve them:

- Count on:

1 693 1 695 -----
 1 780 1 784 -----
 1 865 1 875 -----

- Bonny** and **Tommy** have picked up these shells. Use the method that you prefer and do the calculations.

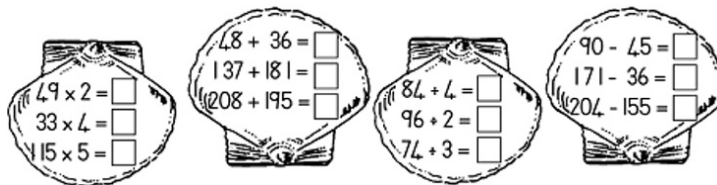


Figure 4.30

Here are the clothes **Bonny** and **Tommy** are taking with them to the sea.

4.7.6.1.1 Bonny



Figure 4.31

-
- How many different ways can she match the tops to the skirts? Show how you calculated this.

4.7.6.1.2 Tommy



Figure 4.32

- How many different ways can he match the pants to the T-shirts? Show how you calculated this.
 - Draw up a list of everything else you think they will need to pack. Tell us why you think so.
-
-

- Here are the snacks for the journey that Mom is planning for the four of them.

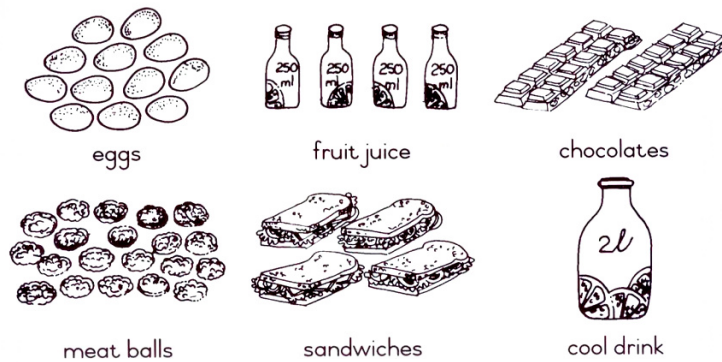


Figure 4.33

- How much can each one have?

eggs	→	.....
meat balls	→	.....
sandwiches	→	.....
chocolate	→	.....
cool drink (mℓ)	→	.....
fruit juice (mℓ)	→	.....

Figure 4.34

-
- Write the equal values for:
-

$\frac{1}{2}$ kg = g	$\frac{1}{2}$ ℓ = mℓ
$\frac{1}{4}$ kg = g	$\frac{1}{4}$ ℓ = mℓ
$\frac{3}{4}$ kg = g	$\frac{3}{4}$ ℓ = mℓ
<hr/>	
$\frac{1}{2}$ m = cm	$\frac{1}{2}$ km = m
$\frac{1}{4}$ m = cm	$\frac{1}{4}$ km = m
$\frac{3}{4}$ m = cm	$\frac{3}{4}$ km = m

Figure 4.35

-
- **Bonny** and **Tommy** have saved their pocket money the whole year for their holiday. Let's count how much each has saved.
-

4.7.6.1.3 Bonny

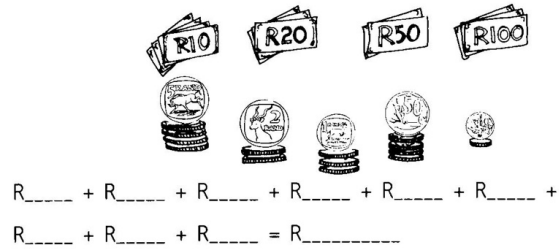


Figure 4.36

4.7.6.1.4 Tommy

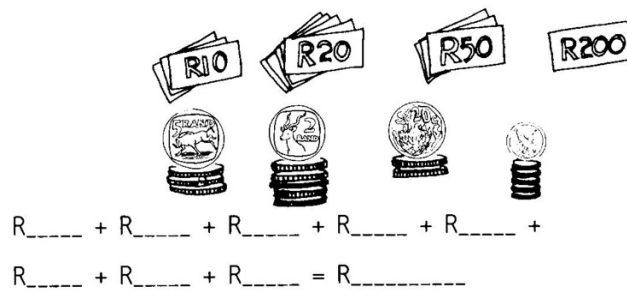


Figure 4.37

- Who saved the most? _____
- Calculate the difference between the amounts they saved.
- Calculate the total amount they saved together.

4.7.6.1.5 Think!

9 + 7 = _____	18 + 5 = _____	190 + 5 = _____
7 + 4 = _____	29 + 9 = _____	473 + 8 = _____
6 + 3 = _____	34 + 2 = _____	256 + 2 = _____
5 + 7 = _____	16 + 8 = _____	731 + 7 = _____
2 + 8 = _____	45 + 6 = _____	319 + 1 = _____
8 + 6 = _____	73 + 5 = _____	585 + 8 = _____
9 + 8 = _____	57 + 7 = _____	162 + 4 = _____
4 + 5 = _____	24 + 6 = _____	848 + 9 = _____
6 + 7 = _____	61 + 7 = _____	324 + 3 = _____
3 + 8 = _____	85 + 9 = _____	917 + 5 = _____
2 + 7 = _____	19 + 3 = _____	242 + 8 = _____
7 + 8 = _____	93 + 4 = _____	679 + 7 = _____
4 + 3 = _____	44 + 8 = _____	396 + 3 = _____
6 + 6 = _____	23 + 9 = _____	538 + 6 = _____
9 + 5 = _____	56 + 5 = _____	457 + 8 = _____

12 - 5 = _____	25 - 9 = _____	180 - 3 = _____
17 - 9 = _____	57 - 5 = _____	475 - 7 = _____
14 - 3 = _____	83 - 3 = _____	711 - 1 = _____
11 - 7 = _____	42 - 7 = _____	287 - 9 = _____
10 - 2 = _____	98 - 4 = _____	824 - 5 = _____
8 - 5 = _____	31 - 8 = _____	392 - 2 = _____
16 - 8 = _____	20 - 1 = _____	948 - 7 = _____
13 - 1 = _____	83 - 2 = _____	461 - 4 = _____
19 - 9 = _____	46 - 5 = _____	633 - 8 = _____
14 - 3 = _____	82 - 9 = _____	556 - 3 = _____
7 - 2 = _____	38 - 4 = _____	370 - 7 = _____
15 - 6 = _____	64 - 6 = _____	792 - 9 = _____
12 - 8 = _____	76 - 9 = _____	509 - 4 = _____
9 - 7 = _____	91 - 2 = _____	131 - 6 = _____
11 - 6 = _____	40 - 4 = _____	213 - 5 = _____

Figure 4.38

- Bonny and Tommy get up at **half past six**. Their

Their school begins at **eight o'clock**. How long do they have to get ready for school?

They have _____

4.7.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:

1.1.1 the intervals specified in grade 2 with increased number ranges;

Assessment Standard 1.3: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;

Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers;

Assessment Standard 1.5: We know this when the learner recognises the place value of digits in whole numbers to at least 3-digit numbers;

Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents;

Assessment Standard 1.7: We know this when the learner solves and explains solutions to practical problems that involve equal sharing and grouping and that lead to solutions that also include unitary and nonunitary fractions (e.g. $\frac{1}{4}$, $\frac{3}{4}$);

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;

1.10.2 doubling and halving;

1.10.3 number-lines;

1.10.4 rounding off in tens.

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.2: We know this when the learner solves problems involving calculations with and conversions.

4.8 Digital clocks⁸

4.8.1 MATHEMATICS

4.8.2 Bonny and Tommy at the sea

4.8.3 EDUCATOR SECTION

4.8.4 Memorandum

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Not much explanation is needed here as this activity is similar to the one where they used the table of distances.

4.8.5 LEARNER SECTION

4.8.6 Content

4.8.6.1 ACTIVITY: Digital clocks [LO 1.8, LO 4.1]

Bonny and **Tommy** can tell the time on an ordinary clock (analogue clock) but now we must see whether they can tell the time on a digital clock.

The **digital clock** shows the full **24 hours** of day. It ranges from **midnight** to **midnight** the following day. That is the reason why the letters a.m. (before noon) and p.m. (after noon) are not used. (anti-meridian, post-meridian).

- On the ordinary clock the time is written as: 1 **a.m.** or 1 **p.m.**
- On the digital clock the time is shown as: **1:00** and **13:00**.
- The hours after 12 o'clock, midday, are counted on. They don't begin from 1 o'clock again but from 13 hours.
- The **minutes** are written **after** the colon and means so many minutes after the hour has past.

These are times between **midnight** and **12 o'clock** in the **afternoon**:



Figure 4.39

-
- What is the time?



Figure 4.40

- Write the correct time on the digital clocks:



Figure 4.41

-
- Now we are going to work with the **hours after twelve o' clock** in the **afternoon**.
 - We write the hours like this:

13:00 14:00 15:00 16:00 17:00 18:00
 19:00 20:00 21:00 22:00 23:00 24:00

If you take away 12 from these hours on the digital clock then you know what hour it is in the afternoon on the ordinary clock.	
Digital clock:	Ordinary clock:
15:00	3 p.m.
22:00	-----
16:00	-----
24:00	-----
19:00	-----
13:00	-----
The minutes come after the colon: We are only going to read the half hours and the quarter hours .	
Digital clock:	Ordinary clock:
15:15	a quarter past 3
18:30	half past 6
21:45	a quarter to 10
14:15	-----
19:30	-----
12:45	-----

Figure 4.42

- What is the time on the ordinary clock?

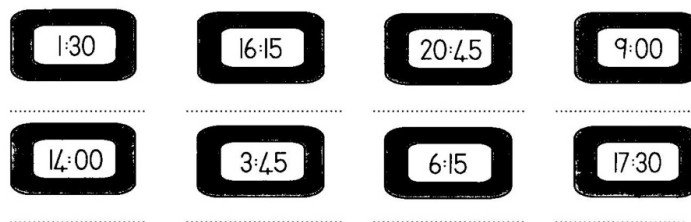


Figure 4.43

Use any method to solve the problems.

- We left Kimberley at 6:00 and arrived in Cape Town at 16:45. We spent an hour on the way to fill up on petrol and to stretch our legs. How long did we actually **travel**?

- School begins at 8:00 in the morning and finishes at 14:00. **Bonny** and **Tommy** played tennis until 16:15. How much longer than usual was their school day?
- Last year dad caught a fish of 8 kg. Tommy caught a fish of 3,25 kg. What was the difference in mass of the two fish?
 - Later Bonny caught a fish of 1,50 kg. What was the total mass of their catch?
 - An octopus has eight arms. How many arms have 20 octopuses altogether?
 - A starfish has five arms. I saw 75 such arms in the sea. How many starfish were there?

4.8.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.1: We know this when the learner reads and writes analogue and digital clock time in terms of hours, half-hours, quarters of an hour and minutes.

4.9 Mass and Height⁹

4.9.1 MATHEMATICS

4.9.2 Bonny and Tommy at the sea

4.9.3 EDUCATOR SECTION

4.9.4 Memorandum

It will probably only be learners in the first group who will progress as far as this module. Do not discourage learners who want to do this module. Even if they can only do a few of the activities they must be given the opportunity to do so. This must be handled carefully so that learners are not discouraged or feel inferior towards other learners. Neither must they develop negative attitudes towards Mathematics.

- **Number concept** to 2 000
- **Operations:** Consolidation and reinforcement of all the operations in previous modules.

A considerable amount of advanced and enrichment work is included and the educator must be familiar with each activity before the learners are expected to complete them.

In **Module 8** number concept is extended to **2 000**. **All operations** are revised and consolidated. Several enrichment and challenging activities are included in this module and should only be given to learners who can manage them and who enjoy challenges. This selection process must be handled carefully and the other learners must not be discouraged or feel inferior towards other learners or the subject Mathematics.

A thorough discussion and explanation of the map on p. 3 as well as the table of distances on p. 4 should help learners complete these worksheets.

Number concept is extended to 2 000.

This is consolidation of the operations as in the previous modules. It offers an opportunity to identify problem areas.

These are to determine to what extent the learners' logical thought processes have developed and to test and consolidate the basic work.

⁹This content is available online at <<http://cnx.org/content/m32340/1.1/>>.

Telling the time on digital clocks/watches should only be done with learners who have mastered the telling of time on ordinary (analogue) clocks/watches. They need much practice in telling the time on ordinary clocks/watches and the corresponding time on digital clocks/watches before completing the worksheets.

Give the learners the opportunity to do these problems without help so that their progress can be determined.

Show examples and discuss ethnic patterns with the learners. Encourage them to bring examples to school and to share these with the class.

Use this for assessment purposes.

This is enrichment work and the educator should study this work first and then decide which of these worksheets should be used for which learners.

All learners who have progressed to Module 8 should be able to complete these worksheets with ease.

Do this activity practically in the classroom and let several learners explain what they see in front of them when walking behind someone. Let three learners stand next to one another and let the other learners stand in front of them. They must walk around the three standing in a line and observe them from behind so that they can discover that the order from left to right has changed.

Not much explanation is needed here as this activity is similar to the one where they used the table of distances.

4.9.5 LEARNER SECTION

4.9.6 Content

4.9.6.1 ACTIVITY: Mass and height [LO 1.8, LO 1.9, LO 2.5]

Here is **Bonny** and **Tommy's** tower of sand. The mass of each cup of sand is **200 g** and the height of each is **6 cm**.

- Complete:

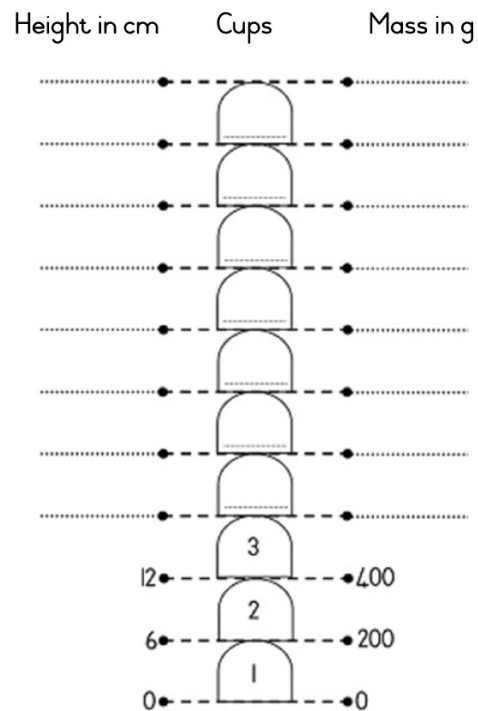


Figure 4.44

- How many cups of sand did they use to build the tower? _____
- What is the **total mass** of the tower? _____ g = _____ kg
- How many cups of sand were needed to build a tower with a mass of 3 kg?

- What is the **total height** of the tower? _____ cm = _____ m
- How many cups of sand were needed to build a tower with a height of 1,02 m?

- Which do you think has the greater mass, a cup of **dry** sand or a cup of **wet** sand? Give your reason.
- Complete the starfish:

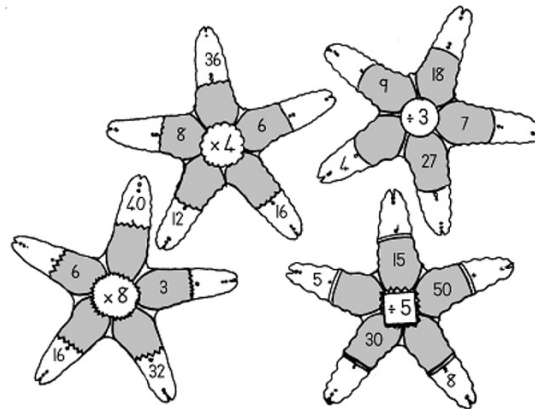


Figure 4.45

- Draw at least two starfish and decorate them with ethnic patterns. Remember that all five arms of a starfish are identical.
- Complete:

$\begin{array}{r} 46 \\ + 32 \\ \hline \end{array}$	$\begin{array}{r} 157 \\ + 103 \\ \hline \end{array}$	$\begin{array}{r} 122 \\ + 95 \\ \hline \end{array}$	$\begin{array}{r} 208 \\ + 206 \\ \hline \end{array}$	$\begin{array}{r} 173 \\ + 240 \\ \hline \end{array}$	$\begin{array}{r} 166 \\ + 264 \\ \hline \end{array}$
$\begin{array}{r} 86 \\ - 53 \\ \hline \end{array}$	$\begin{array}{r} 180 \\ - 45 \\ \hline \end{array}$	$\begin{array}{r} 359 \\ - 162 \\ \hline \end{array}$	$\begin{array}{r} 291 \\ - 255 \\ \hline \end{array}$	$\begin{array}{r} 407 \\ - 137 \\ \hline \end{array}$	$\begin{array}{r} 514 \\ - 167 \\ \hline \end{array}$
$\begin{array}{r} 25 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 123 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 202 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 116 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 250 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 136 \\ \times 4 \\ \hline \end{array}$
$2 \overline{)86}$	$3 \overline{)90}$	$5 \overline{)55}$	$2 \overline{)200}$	$4 \overline{)400}$	$3 \overline{)300}$
$4 \overline{)480}$	$3 \overline{)330}$	$2 \overline{)260}$	$5 \overline{)550}$	$2 \overline{)284}$	$4 \overline{)448}$
$3 \overline{)342}$	$4 \overline{)456}$	$2 \overline{)238}$	$5 \overline{)560}$	$3 \overline{)672}$	$2 \overline{)830}$
$2 \overline{)87}$	$3 \overline{)95}$	$4 \overline{)87}$	$5 \overline{)59}$		
$3 \overline{)334}$	$2 \overline{)269}$	$5 \overline{)509}$	$4 \overline{)449}$		
$4 \overline{)483}$	$5 \overline{)553}$	$2 \overline{)461}$	$3 \overline{)368}$		

Figure 4.46

- **Bonny** picked up 93 shells and wants to put the same amount into four buckets. How many will she put into each bucket and how many will be left over?

4.9.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.5: We know this when the learner identifies, describes and copies geometric patterns in natural and cultural artefacts of different cultures and times.

4.10 Area¹⁰

4.10.1 MATHEMATICS

4.10.2 Bonny and Tommy at the sea

4.10.3 EDUCATOR SECTION

4.10.4 Memorandum

It will probably only be learners in the first group who will progress as far as this module. Do not discourage learners who want to do this module. Even if they can only do a few of the activities they must be given the opportunity to do so. This must be handled carefully so that learners are not discouraged or feel inferior towards other learners. Neither must they develop negative attitudes towards Mathematics.

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Use this for assessment purposes.

This is enrichment work and the educator should study this work first and then decide which of these worksheets should be used for which learners.

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Do this activity practically in the classroom and let several learners explain what they see in front of them when walking behind someone. Let three learners stand next to one another and let the other learners stand in front of them. They must walk around the three standing in a line and observe them from behind so that they can discover that the order from left to right has changed.

Not much explanation is needed here as this activity is similar to the one where they used the table of distances.

¹⁰This content is available online at <<http://cnx.org/content/m32341/1.1/>>.

4.10.5 LEARNER SECTION

4.10.6 Content

4.10.6.1 ACTIVITY: Area [LO 1.4, LO 1.8, LO 1.9, LO 1.10, LO 1.12, LO 2.2, LO 2.4, LO 3.1, LO 3.5, LO 4.6]

This is a floor covered with tiles.

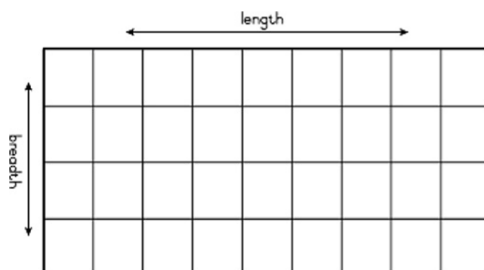


Figure 4.47

- How many tiles are needed to cover the whole floor?
- Write a number sentence to show how you did the calculation.

Number sentence: _____

You multiplied the **length** and the **breadth**.

If I want to find out how big the space inside a rectangle is, I can say: length x breadth = space inside (area), therefore:

$$\text{Area} = l \times b$$

Length x breadth gives us **squared units** and we write it as:

mm^2 , cm^2 or m^2

$9 \text{ cm} \times 4 \text{ cm} = 36 \text{ cm}^2$. The 2 at the top indicates that you have measured the area with **cm squares**.

☺ Calculate the area of this rectangle.



Area = $l \times b$ _____ cm x _____ cm = _____ cm^2 .

Area = _____ cm^2 .

Figure 4.48

- Calculate the area of the square.

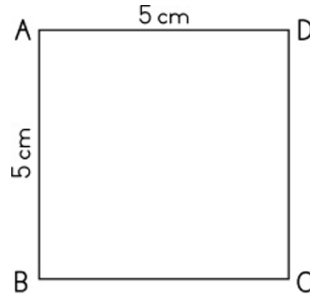


Figure 4.49

The length is 5 cm and the breadth is 5cm, therefore it is $5 \text{ cm} \times 5 \text{ cm} = 25 \text{ cm}^2$.

Take **25** counters and make a **square** with them. Draw them. There are five rows of 5.

- Take nine counters and make a **square** with them. Draw them. There are _____.

Because the length and the breadth are equal it is unnecessary to ask what the length and what the breadth is. **Ask: What is the square root of 9?** The square root of 9 is 3.

- Take 16 counters and make a square with them. Draw them. There are _____.
- What is the square root of 16? _____ Write:
- Take four counters and make a square with them. Draw them. There are _____.
- What is the square root of 4? _____ Write:
- Draw the squares on the squared paper. Write how many blocks in each square.
- Colour them in.

A: sides 1 cm _____ B: sides 2 cm _____ C: sides 3 cm _____
 D: sides 4 cm _____ E: sides 5 cm _____ F: sides 6 cm _____

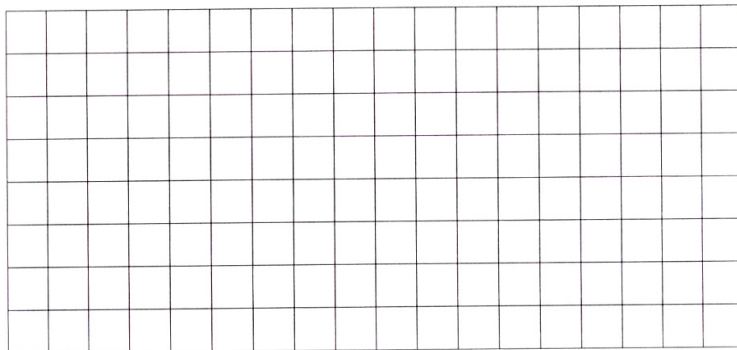
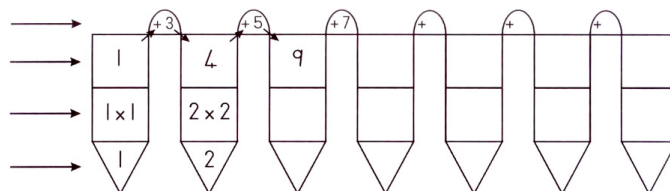


Figure 4.50

- Complete each row:



1 is the square root of 1
 2 is the square root of _____
 3 is the square root of _____
 4 is the square root of _____
 5 is the square root of _____
 6 is the square root of _____
 7 is the square root of _____

We write it as: $\sqrt{\quad}$
 $\rightarrow \sqrt{\quad}$
 $\rightarrow \sqrt{\quad}$
 $\rightarrow \sqrt{\quad}$
 $\rightarrow \sqrt{\quad}$
 $\rightarrow \sqrt{\quad}$
 $\rightarrow \sqrt{\quad}$

Figure 4.51

- How many groups of ten can I make?

520 = _____ tens 790 = _____ tens
 900 = _____ tens 1 000 = _____ tens

- How many groups of hundred can I make?

$$1\ 200 = \underline{\hspace{1cm}} \text{ hundreds } 1\ 500 = \underline{\hspace{1cm}} \text{ honderde}$$

$$1\ 900 = \underline{\hspace{1cm}} \text{ hundreds } 2\ 000 = \underline{\hspace{1cm}} \text{ honderde}$$

- Rename:

$$1\ 652 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$

$$1\ 508 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$

$$1\ 870 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$

- Join:

$$1\ 000 + 700 + 80 + 4 = \underline{\hspace{2cm}}$$

$$1\ 000 + 500 + 260 + 9 = \underline{\hspace{2cm}}$$

$$1\ 000 + 600 + 130 + 25 = \underline{\hspace{2cm}}$$

$$1\ 000 + 800 + 1\ 10 + 91 = \underline{\hspace{2cm}}$$

- Fill in $>$, $<$ of $=$:

$$2\ 000 - 200 \text{ } 1\ 000 - 100 \quad 1504 + 20 \text{ } 1\ 304 + 200$$

$$1\ 450 + 130 \text{ } 1\ 680 - 100 \quad 1\ 280 + 40 \text{ } 1\ 280 + 400$$

- Make each number 1 1 1 more:

$$1\ 446 : \underline{\hspace{1cm}} \quad 1\ 095 : \underline{\hspace{1cm}} \quad 1\ 901 : \underline{\hspace{1cm}}$$

- Complete:

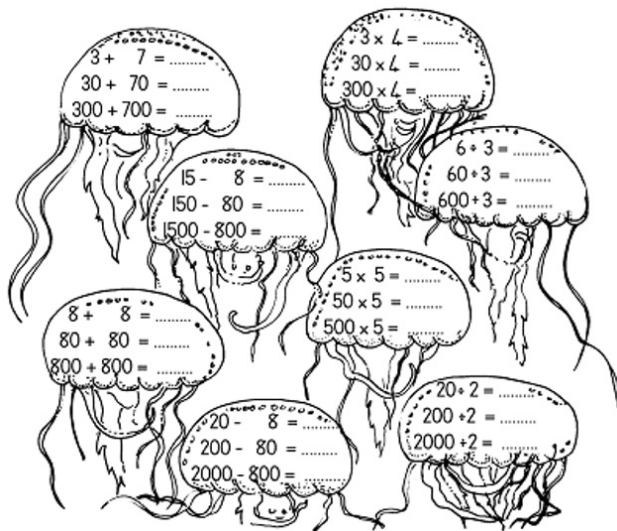


Figure 4.52

- Follow the fish to discover the chest of diamonds!

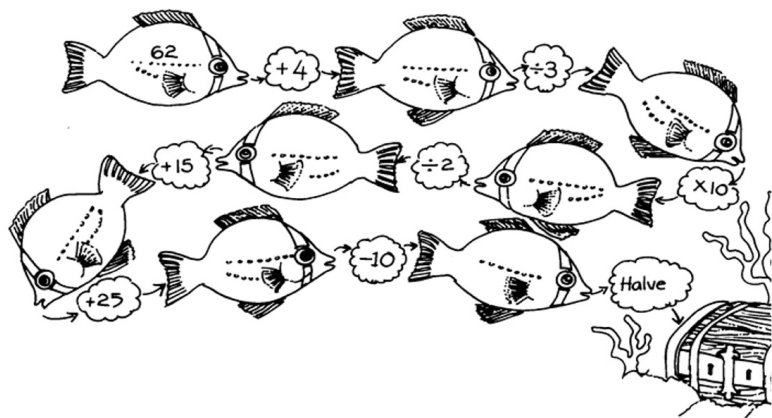


Figure 4.53

It has been a long year and your teacher is tired. Help her to mark the work.

- Write the correct answer where you find mistakes.

- 1 332 is an even number.
2 195 is an even number.
1 998 > 1 989
1 824 < 1 842
1 000 + 300 + 63 = 1 336
1 643 = 1 000 + 500 + 143
1 505 comes just before 1 506
1 999 comes just before 1 998
566 doubled is 1 012
The halve of 1 840 is 920
2 x 349 = 698
624 ÷ 3 = 206
1 637 is 3 more than 1 640.
1 785 is 5 less than 1 790.
1 675 is halfway between 1 670 and 1 680.

Mark the correct word with a [U+F0FC] :	True	False
A rectangle can have 3 right angles.		
A sphere has the shape of a ball.		
An isosceles triangle's sides are all the same length.		
A cool drink tin is cylindrical.		
An egg is spherical.		
A rectangle has 4 right angles.		

Table 4.9

- Underline the correct word:

A (right angle / obtuse angle / acute angle) is 90° .

A cube has (4 / 6 / 8) faces.

An equilateral triangle has (1 / 2 / 3) sides that are equal.

- Write holiday stories for these number sentences and do the calculations.

$$167 + 205 + 99 =$$

$$750 - 145 - 260 =$$

$$34 \times 3 - 57 =$$

$$255 - 191 \div 4 =$$

- **Mom, Dad, Bonny and Tommy** are walking along the sea. Colour in the picture.



Figure 4.54

- You are walking directly behind them. Draw what you see in front of you.

It is the last school day of the year.

Bonny and Tommy want to say good-bye because at 6:00 tomorrow morning they are leaving for Cape Town.

- Decipher their greeting:

Dwars → Af ↓	1	2	3	4	5	6
1	A	T	G	M	P	N
2	B	W	Z	I	C	Q
3	O	F	S	K	V	X
4	R	J	L	O	H	E
5	U	D	M	Z	T	W
6	F	S	K	R	Y	A

Af	1	3	5		6	2	4	1	3
Dwars	2	1	5		2	4	6	6	3
Oplossing									

Figure 4.55

4.10.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers;

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;

1.10.2 doubling and halving;

1.10.3 number-lines;

1.10.4 rounding off in tens.

Assessment Standard 1.12: We know this when the learner checks the solution given to problems by peers.

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.2: We know this when the learner copies and extends simple number sequences to at least 1 000;

Assessment Standard 2.4: We know this when the learner describes observed patterns;

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

Assessment Standard 3.1: We know this when the learner recognises, identifies and names two-dimensional shapes and three-dimensional objects in the environment and in pictures,

Assessment Standard 3.5: We know this when the learner recognises and describes three-dimensional objects from different positions;

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.6: We know this when the learner investigates (alone and/or as a member of a group or team) and approximates.

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